DVP-NS425P

RMT-D153A

SERVICE MANUAL

US Model

Self Diagnosis Supported model

SPECIFICATIONS

System
Laser: Semiconductor laser
Signal format system: NTSC

Audio characteristics
Frequency response: DVD VIDEO (PCM 96 kHz): 2 Hz to 44 kHz (±1.0 dB)/ DVD VIDEO (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB)/CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio): 115 dB
Harmonic distortion: 0.003%
Dynamic range: DVD VIDEO: 103 dB/ CD: 99 dB
Wow and flutter: Less than detected value (±0.001% W PEAK)

Outputs
(Jack name: Jack type/Output level/ Load impedance)
LINE OUT (AUDIO): Phono jack/ 2 Vrms/ 10 kilohms
DIGITAL OUT (COAXIAL): Phono jack/ 0.5 Vp-p/75 ohms
COMPONENT VIDEO OUT (Y, P_B, P_R): Phono jack/Y: 1.0 Vp-p/P_B, P_R: 0.65 Vp-p/75 ohms
LINE OUT (VIDEO): Phono jack/ 1.0 Vp-p 75 ohms
S VIDEO OUT: 4-pin mini DIN/Y: 1.0 Vp-p, C: 0.286 Vp-p/75 ohms

General
Power requirements: 120 V AC, 60 Hz
Power consumption: 12 W
Dimensions (approx.): 430 × 55.5 × 244 mm (17 × 2 3/16 × 9 1/2 in.) (width/height/depth) incl. projecting
Mass (approx.): 2.15 kg (4 3/4 lb)
Operating temperature: 5°C to 35°C (41°F to 95°F)
Operating humidity: 25% to 80%

Supplied accessories
See page 14

Specifications and design are subject to change without notice.

ENERGY STAR® is a U.S. registered mark.
As an ENERGY STAR® Partner, Sony Corporation has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

DVD VIDEO COMPACT disc DIGITAL VIDEO

CD/DVD PLAYER

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion.
   Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

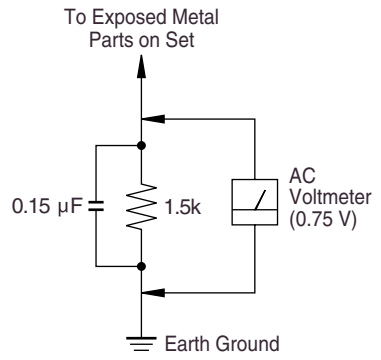


Fig.A. Using an Acvoltmeter to check AC leakage.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:
The use of optical instrument with this product will increase eye hazard.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

LEAKAGE TEST
The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA TW-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC volmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

Unleaded solder
Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK
Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C highter than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!
LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

SERVICE NOTE

1. Disc Removal Procedure (at POWER OFF) 5
2. How to Service MB-113 Board 5

1. GENERAL

Precautions 1-1
About this Manual 1-1
This Player Can Play the Following Discs 1-1
Notes about the Discs 1-1
Index to Parts and Controls 1-2
Guide to On-Screen Displays (Control Bar) 1-3
Hookups 1-3
Hooking Up the Player 1-3
Step 1: Unpacking 1-3
Step 2: Inserting Batteries into the Remote 1-3
Step 3: Connecting the Video Cords 1-3
Step 4: Connecting the Audio Cords 1-4
Step 5: Connecting the Power Cords 1-5
Step 6: Quick Setup 1-5
Playing Discs 1-6
Playing Discs 1-6
Resuming Playback from the Point Where You Stopped the Disc (Multi-disc Resume) 1-6
Using the DVD's Menu 1-6
Playing VIDEO CD's With PBC Functions (PBC Playback) 1-6
Playing an MP3 Audio Track 1-7
Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play 1-7
Searching for a Scene 1-8
Searching for a Particular Point on a Disc (Scan, Slow-motion Play, Search, Freeze Frame) 1-8
Searching for a Title/Chapter/Track/Scene, etc. (Search mode) 1-9
Viewing Information About the Disc 1-9
Checking the Playing Time and Remaining Time 1-9
Sound Adjustment 1-10
Changing the Sound 1-10
TV Virtual Surround Settings (TVS) 1-10
Enjoying Movies 1-10
Displaying the Subtitles 1-10
Adjusting the Picture Quality (BNR) 1-10
Adjusting the Playback Picture (CUSTOM PICTURE MODE) 1-11
Enhancing the Playback Picture (DIGITAL VIDEO ENHANCER) 1-11
Changing the Angles 1-11
Using Various Additional Function 1-11
Locking Discs (CUSTOME PARENTAL CONTROL, PARENTAL CONTROL) 1-11
Controlling Your TV with the Supplied Remote 1-12
Setting and Adjustmants 1-13
Using the Setup Display 1-13
Setting the Display or Sound Track Language (LANGUAGE SETUP) 1-13
Setting for the Display (SCREEN SETUP) 1-13
Custom Setting (CUSTOM SETUP) 1-13
Setting for the Sound (AUDIO SETUP) 1-13
Additional Information 1-14
Troubleshooting 1-14
Self-diagnosis Function (When letters/numbers appear in the display 1-14
Glossary 1-15
Language Code List 1-15

2. DISASSEMBLY

2-1. Upper Case 2-1
2-2. Front Panel Assembly 2-1
2-3. Loading Assembly 2-2
2-4. OPTICAL DEVICE (KHM-300AAA) 2-2
2-5. DC MOTOR and MS-161 BOARD 2-3
2-6. SW-413 BOARD 2-3
2-7. AF-099 Board 2-4
2-8. MB-113 Board 2-5
2-9. Switching Regulator 2-5
2-10. Interval Views 2-6
2-11. Circuit Boards Location 2-7

3. BLOCK DIAGRAMS

3-1. Overall Block Diagram 3-1
3-2. System Control/Signal Processor Block Diagram 3-3
3-3. RF/Servo Block Diagram 3-5
3-4. Audio Block Diagram 3-7
3-5. Video Block Diagram 3-9
3-6. Interface Control Block Diagram 3-11
3-7. Power Block Diagram (1/2) 3-13
3-8. Power Block Diagram (2/2) 3-15

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. Frame Schematic Diagram 4-1
4-2. Printed Wiring Boards and Schematic Diagrams 4-3
Waveforms 4-5
- AF-099 Printed Wiring Board 4-7
- AF-099 (Video Out) Schematic Diagram 4-9
- AF-099 (Audio Out) Schematic Diagram 4-11
- AF-099 (PS Trough) Schematic Diagram 4-13
- AF-099 (IF) Schematic Diagram 4-15
- MB-113 Printed Wiring Board 4-17
- MB-113 (Servo Drive) Schematic Diagram 4-19
- MB-113 (System Control) Schematic Diagram 4-21
- MS-161 Printed Wiring Board 4-23
- MS-161 (Mecha Deck) Schematic Diagram 4-23
- SW-431 Printed Wiring Board 4-25
- SW-431 (Switch) Schematic Diagram 4-25
- Power Block (HS12S2U) Printed Wiring Board 4-27
- Power Block (Switching Regulator) Schematic Diagram 4-29

5. IC PIN FUNCTION DESCRIPTION

5-1. System Control-Video Pin Function (MB-113 BOARD IC201) 5-1

6. TEST MODE

6-1. General Description 6-1
6-2. Starting Test Mode 6-1
6-3. Drive Manual Operation 6-1
6-4. Mirror Time Adjustment 6-1
6-4-1. Executing Mirror Time Adjustment 6-2
6-5. Executing IOP Measurement 6-3

7. ELECTRICAL ADJUSTMENT

7-1. Power Supply Check 7-1
7-2. Adjustment Related Parts Arrangement 7-2

8. REPAIR PARTS LIST

8-1. Exploded Views 8-1
8-1-1. Main Section 8-1
8-1-2. Mechanism Deck Assembly 8-2
8-2. Electrical Parts List 8-3

SERVICE NOTE

1. DISC REMOVAL PROCEDURE (at POWER OFF)

1) Open dust cover to access to a hole insert a tapering driver into the aperture of the unit bottom, and move the lever of chuck can in the direction of the arrow A. (See Fig. 1)
2) Draw out the tray in the direction of the arrow B, and remove a disc. (See Fig. 1)

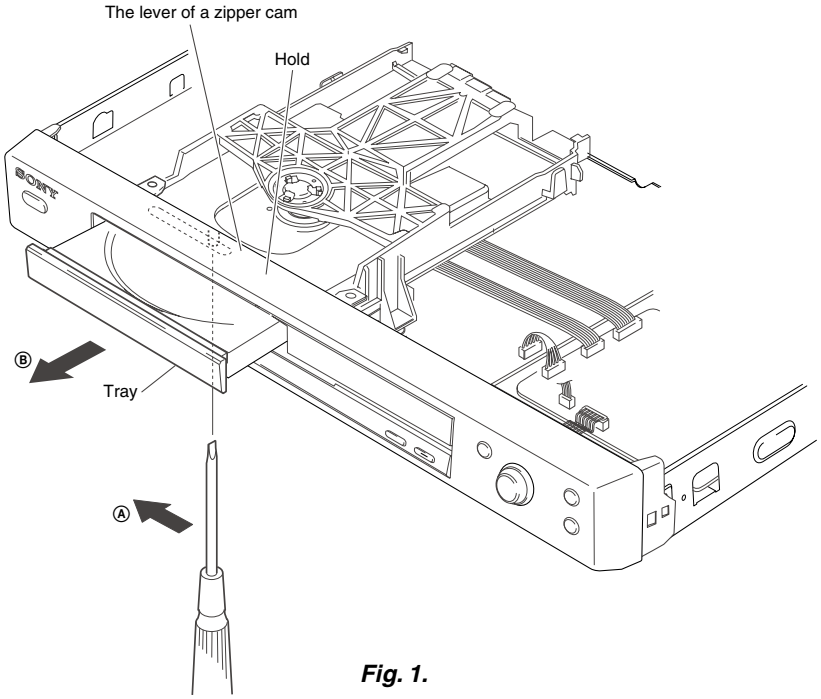
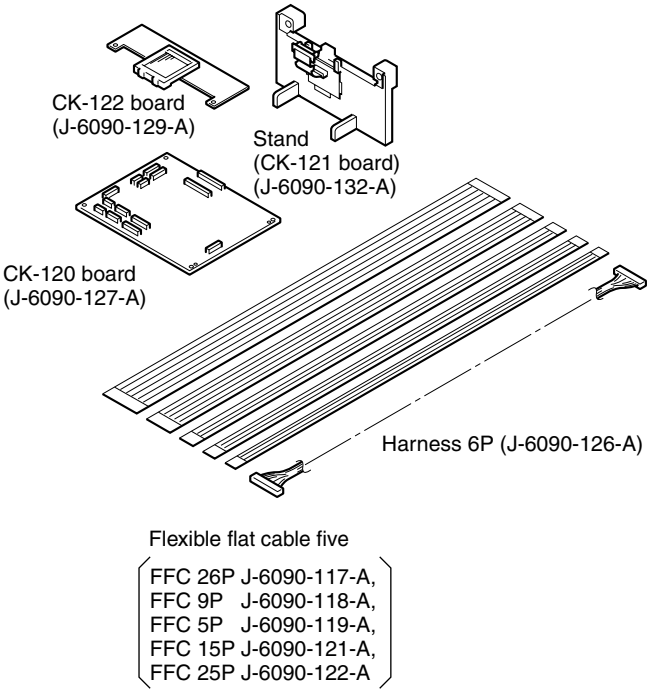


Fig. 1.

2. HOW TO SERVICE MB-113 BOARD

• Jig

1) Remove the upper case from the main unit. (Refer to 2-1)
2) Remove the MB-113 board. (Refer to 2-7)
3) Set the removed MB-113 board and CK-122 board to the stand as shown in Fig. 2.



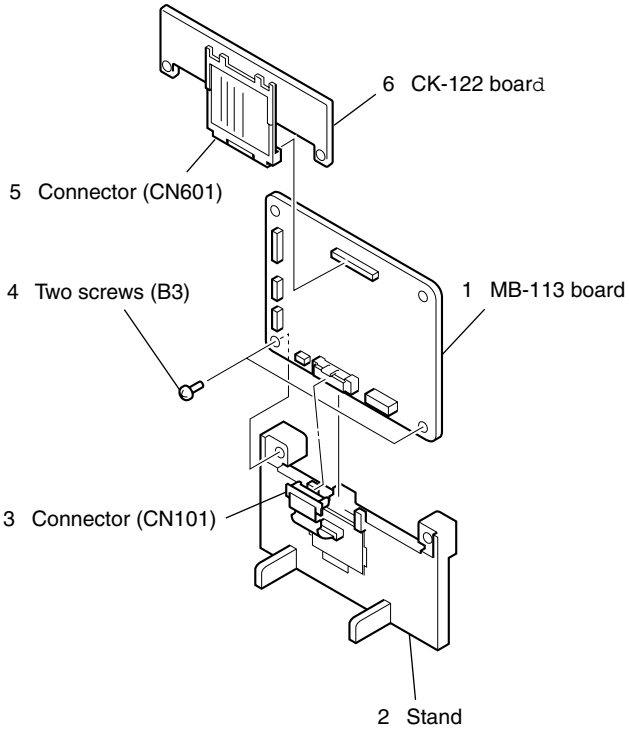


Fig. 2.

4) Fix the CK-120 board to the location where the MB-113 board is removed.

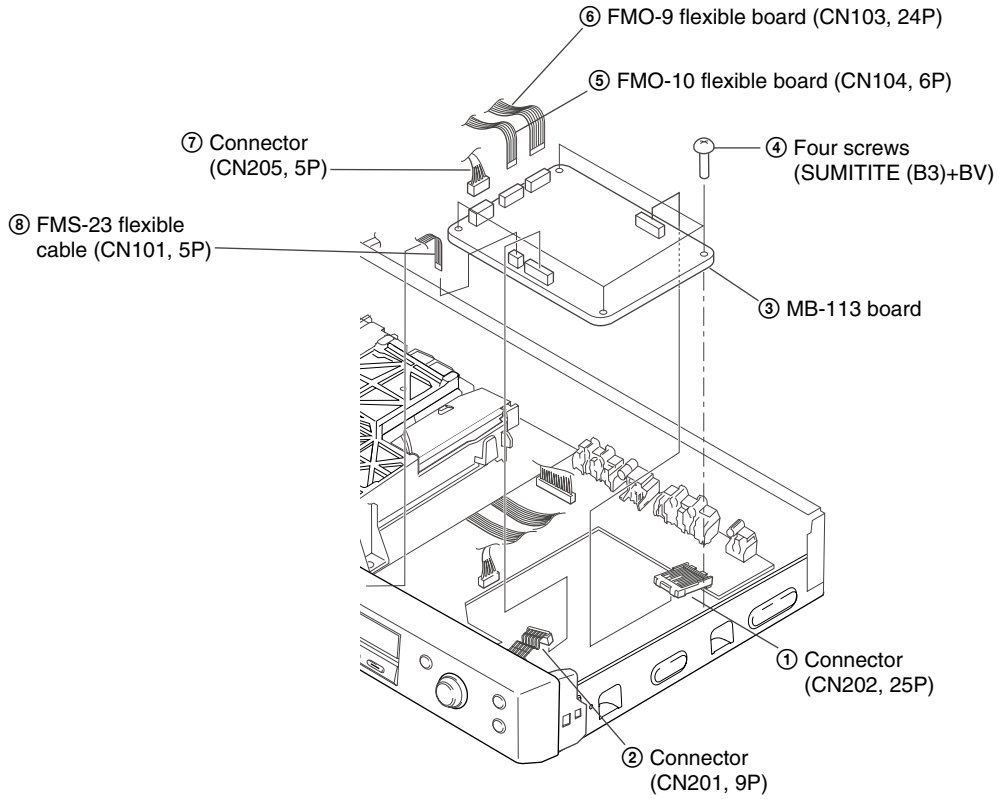

⑥ FMO-9 flexible board (CN103, 24P)
⑤ FMO-10 flexible board (CN104, 6P)
⑦ Connector (CN205, 5P)
④ Four screws (SUMITITE (B3)+BV)
⑧ FMS-23 flexible cable (CN101, 5P)
③ MB-113 board
① Connector (CN202, 25P)
② Connector (CN201, 9P)

Fig. 3.

5) Set the five flexible flat cables and the harness as shown in Fig. 4 and Fig. 5.

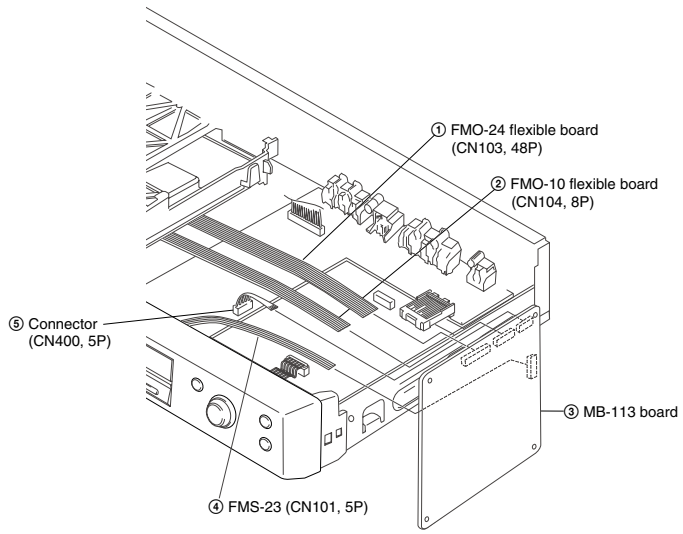


Fig. 4.

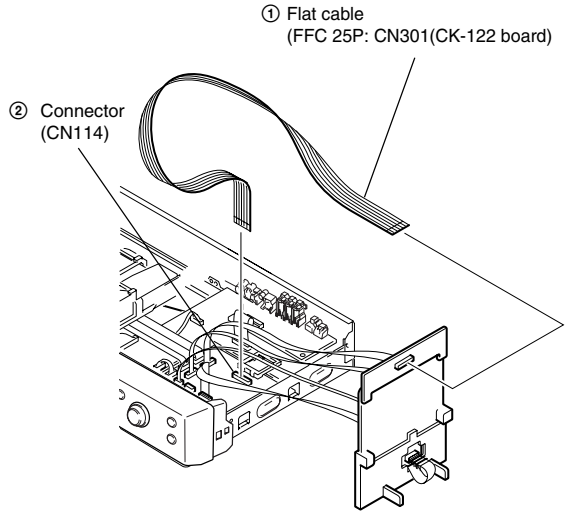


Fig. 5.

6) Set complete!

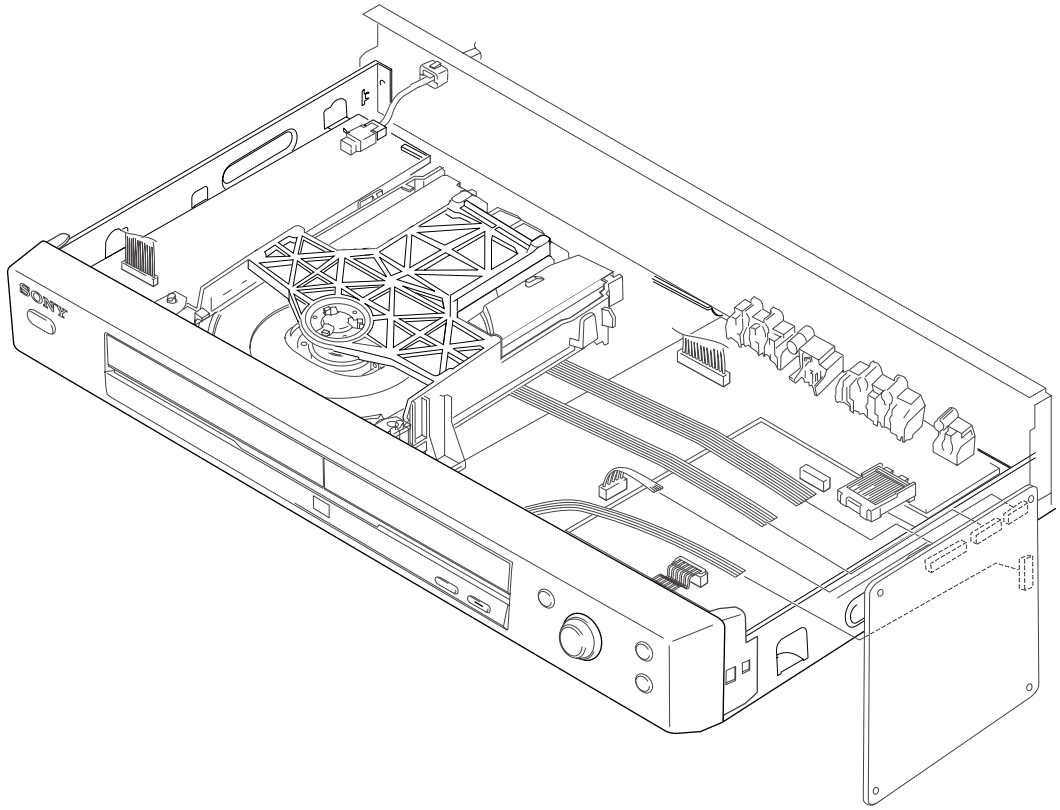


Fig. 6.

MEMO

MEMO

SECTION 1 GENERAL

This section is extracted from instruction manual. 3-085-050-11(2)

Precautions

On safety

- Caution – The use of optical instruments with this product will increase eye hazard.
- To prevent fire or shock hazard, do not place objects filled with liquids, such as vases, on the apparatus.
- Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources

- The player is not disconnected from the AC power source as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord, grasp the plug itself; never pull the cord.
- Should the AC power cord need to be changed, have it done at a qualified service shop only.

On placement

- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.
- Do not install the player in an inclined position. It is designed to be operated in a horizontal position only.
- Keep the player away from equipment with strong magnets, such as microwave ovens, or large loudspeakers.
- Do not place heavy objects on the player.

On operation

- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.
- When you move the player, take out any discs. If you don't, the disc may be damaged.

On adjusting volume

Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

On cleaning

Clean the cabinet, panel, and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

On cleaning discs

Do not use a commercially available cleaning disc. It may cause a malfunction.

IMPORTANT NOTICE

Caution: This player is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Plasma display panel televisions and projection televisions are susceptible to this.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

About this Manual

- Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
- The meaning of the icons used in this manual is described below:

Icon	Meaning
DVD	Functions available for DVD VIDEOs and DVD-RWs/ DVD-Rs in video mode or DVD+RWs/DVD+Rs
VCD	Functions available for VIDEO CDs, Super VCDs, or CD-Rs/ CD-RWs in video CD format or Super VCD format
DATA CD	Functions available for DATA CDs (CD-ROMs/CD-Rs/CD-RWs containing MP3* audio tracks)
CD	Functions available for music CDs or CD-Rs/CD-RWs in music CD format

* MP3 (MPEG 1 Audio Layer 3) is a standard format defined by ISO (International Standard Organization) /MPEG which compresses audio data.

This Player Can Play the Following Discs

Format of discs	
DVD VIDEO (page 62)	DVD VIDEO
VIDEO CD	COMPACT disc DIGITAL VIDEO
Music CD	COMPACT disc DIGITAL AUDIO

The "DVD VIDEO" logo is a trademark.

Region code

Your player has a region code printed on the back of the unit and only will play DVD VIDEO discs (playback only) labeled with identical region codes. This system is used to protect copyrights.

DVDs labeled (ALL) will also play on this player.

If you try to play any other DVD, the message "Playback prohibited by area limitations." will appear on the TV screen. Depending on the DVD, no region code indication may be labeled even though playing the DVD is prohibited by area restrictions.

Example of discs that the player cannot play

The player cannot play the following discs:

- All CD-ROMs (including PHOTO CDs)/ CD-Rs/CD-RWs other than those recorded in the following formats:
  - –music CD format
  - –video CD format
  - –MP3 format that conforms to ISO9660* Level 1/Level 2, or its extended format, Joliet
- Data part of CD-Extras
- DVD-RWs in VR mode
- DVD-ROMs
- DVD Audio discs
- HD layer on Super Audio CDs

* A logical format of files and folders on CD-ROMs, defined by ISO (International Standard Organization).

Also, the player cannot play the following discs:

- A DVD with a different region code.
- A disc recorded in a color system other than NTSC, such as PAL or SECAM (this player conforms to the NTSC color system).
- A disc that has a non-standard shape (e.g., card, heart).
- A disc with paper or stickers on it.
- A disc that has the adhesive of cellophane tape or a sticker still left on it.

Notes

- **Notes about DVD-RWs/DVD-Rs, DVD+RWs/ DVD+Rs or CD-Rs/CD-RWs**
  Some DVD-RWs/DVD-Rs, DVD+RWs/ DVD+Rs, or CD-Rs/CD-RWs cannot be played on this player due to the recording quality or physical condition of the disc, or the characteristics of the recording device and authoring software.
  The disc will not play if it has not been correctly finalized. For more information, see the operating instructions for the recording device. Note that discs created in the Packet Write format cannot be played.
- **Music discs encoded with copyright protection technologies**
  This product is designed to playback discs that conform to the Compact Disc (CD) standard. Recently, various music discs encoded with copyright protection technologies are marketed by some record companies. Please be aware that among those discs, there are some that do not conform to the CD standard and may not be playable by this product.

Note on playback operations of DVDs and VIDEO CDs

Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

Copyrights

This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

Notes about the Discs

- To keep the disc clean, handle the disc by its edge. Do not touch the surface.

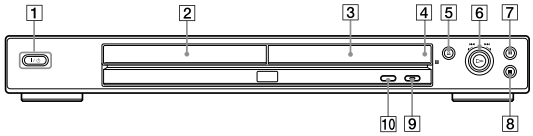
- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.
- Clean the disc with a cleaning cloth. Wipe the disc from the center out.

- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.

Index to Parts and Controls

For more information, refer to the pages indicated in parentheses.

Front panel

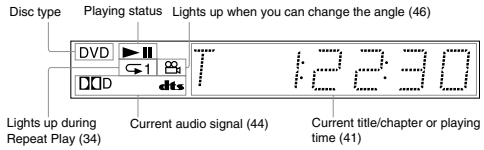


1 I/⏻ (on/standby) button (25)
2 Disc tray (25)
3 Front panel display (9)
4 (remote sensor) (14)
5 ⏏ (open/close) button (25)
6 ⊳/Playback Dial (25, 36)
7 ❚❚ (pause) button (26)
8 ■ (stop) button (26)
9 PROGRESSIVE button*/indicator (17)
Lights up when the player outputs progressive signals.
10 SURROUND button (44)

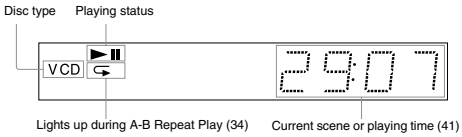
* Only press the PROGRESSIVE button if you have connected a progressive signal compatible TV to the COMPONENT VIDEO OUT jacks using a component video cord (page 17).

Front panel display

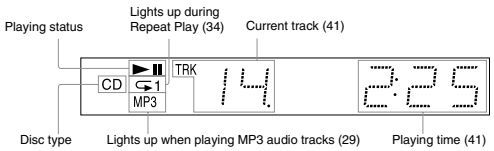
When playing back a DVD



When playing back a VIDEO CD with Playback Control (PBC) (28)

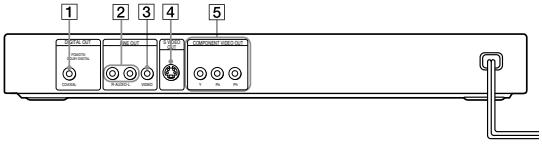


When playing back a CD, DATA CD (MP3 audio), or VIDEO CD (without PBC)



➡continued

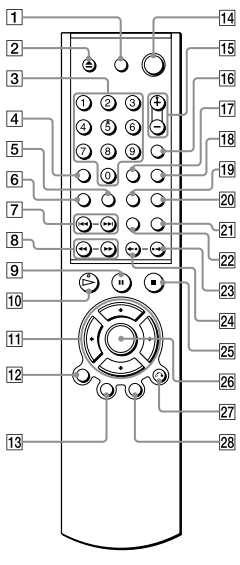
Rear panel



1 DIGITAL OUT (COAXIAL) jack (20, 21, 22)
2 LINE OUT L/R (AUDIO) jack (19, 20, 21)
3 LINE OUT (VIDEO) jack* (15)
4 S VIDEO OUT jack* (15)
5 COMPONENT VIDEO OUT** jacks (15)

* Do not press the PROGRESSIVE button on the front panel if you have connected the TV to these jacks (page 17).
** Only press the PROGRESSIVE button on the front panel if you have connected a progressive signal compatible TV to the player (page 17).

Remote



1 TV I/⏻ (on/standby) button (52)
2 ⏏ OPEN/CLOSE button (25)
3 Number buttons (28)
The number 5 button has a tactile dot.*
4 CLEAR button (31)
5 SUBTITLE button (46)
6 AUDIO button (44)
7 ⏮/⏭ PREV/NEXT (previous/next) buttons (26)
8 ◄◄/◄◄/►► ►► SCAN/SLOW buttons (36)
9 ❚❚ PAUSE button (26)
10 ▷ PLAY button (25)
The ▷ button has a tactile dot.*
11 ←/↑/↓/→ buttons (28)
12 DISPLAY button (12)
13 TOP MENU button (28)
14 I/⏻ (on/standby) button (25)
15 VOL (volume) +/– buttons (52)
The + button has a tactile dot.*
16 TV/VIDEO button (52)
17 TIME/TEXT button (40)
18 PICTURE MODE button (47)
19 ANGLE button (46)
20 SUR (surround) button (44)
21 PICTURE NAVI (picture navigation) button (39)
22 REPEAT button (34)
23 •→/II► INSTANT SEARCH/STEP button (26, 36)
24 ←•/◄II INSTANT REPLAY/STEP button (26, 36)
25 ■ STOP button (26)
26 ENTER button (26)
27 ↶ RETURN button (26)
28 MENU button (28, 29)

* Use the tactile dot as a reference when operating the player.

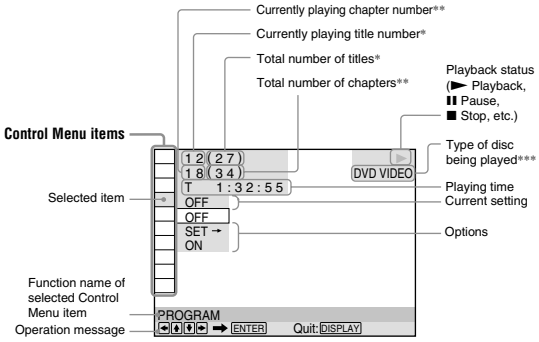
Guide to the Control Menu Display

Use the Control Menu to select a function and to view related information. Press DISPLAY to turn on.

Control Menu Display

The Control Menu display will show different items depending on the disc type. For details about each item, please refer to the pages in the parentheses.

Example: Control Menu display when playing a DVD.



* Displays the scene number for VIDEO CDs (PBC is on), track number for VIDEO CDs/CDs, album number for DATA CDs.
** Displays the index number for VIDEO CDs/CDs, MP3 audio track number for DATA CDs.
*** Displays Super VCD as "SVCD."

To turn off the display
Press DISPLAY.

List of Control Menu Items

Item	Item Name, Function, Relevant Disc Type
	TITLE (page 37)/SCENE (page 37)/TRACK (page 37) Selects the title, scene, or track to be played. DVD VCD
	CHAPTER (page 37)/INDEX (page 37) Selects the chapter or index to be played. DVD VCD
	ALBUM (page 29) Selects the album to be played. DATA CD
	TRACK (page 37) Selects the track to be played. CD DATA CD
	TIME/TEXT (page 37) Checks the elapsed time and the remaining playback time. Input the time code for picture and music searching. Displays the DVD/CD text or the DATA CD's track name. DVD VCD CD DATA CD
	PROGRAM (page 31) Selects the title, chapter, or track to play in the order you want. DVD VCD CD
	SHUFFLE (page 33) Plays the title, chapter, or track in random order. DVD VCD CD
	REPEAT (page 34) Plays the entire disc (all titles/all tracks/all albums) repeatedly or one title/chapter/track/album repeatedly. DVD VCD CD DATA CD
	A-B REPEAT (page 34) Specifies the parts you want to play repeatedly. DVD VCD CD
	SHARPNESS (page 48) Exaggerates the outline of the image to produce a sharper picture. DVD VCD
	PARENTAL CONTROL (page 49) Set to prohibit playback on this player. DVD
	SETUP (page 53) QUICK Setup (page 23) Use Quick Setup to choose the desired language of the on-screen display, the aspect ratio of the TV and the audio output signal. CUSTOM Setup In addition to the Quick Setup setting, you can adjust other various settings. RESET Returns the settings in "SETUP" to the default setting. DVD VCD CD DATA CD

Hint

The Control Menu icon indicator lights up in green → when you select any item except "OFF." ("PROGRAM," "SHUFFLE," "REPEAT," "A-B REPEAT," "SHARPNESS" only).

Hooking Up the Player

Follow Steps 1 to 6 to hook up and adjust the settings of the player.

Notes

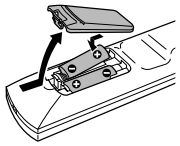
- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.
- You cannot connect this player to a TV that does not have a video input jack.
- Be sure to disconnect the power cord of each component before connecting.

Step 1: Unpacking

Check that you have the following items:
- Audio/video cord (pinplug × 3 ⟷ pinplug × 3) (1)
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)

Step 2: Inserting Batteries into the Remote

You can control the player using the supplied remote. Insert two Size AA (R6) batteries by matching the ⊕ and ⊖ ends on the batteries to the markings inside the compartment. When using the remote, point it at the remote sensor on the player.

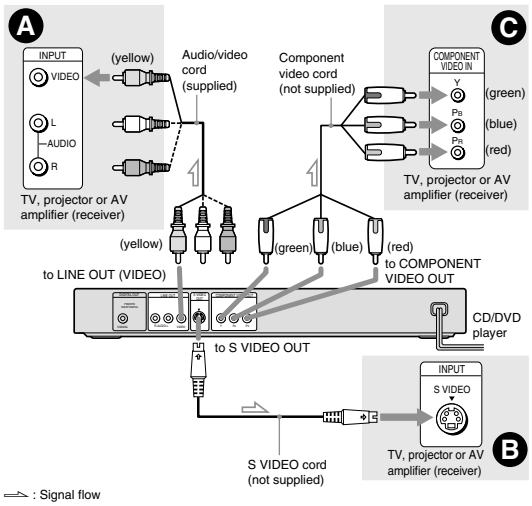


Notes

- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct light from the sun or a lighting apparatus. Doing so may cause a malfunction.
- If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

Step 3: Connecting the Video Cords

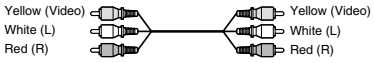
Connect this player to your TV monitor, projector, or AV amplifier (receiver) using a video cord. Select one of the patterns A through C. In order to view progressive signal (480p) pictures with a compatible TV, projector, or monitor, you must use connection C, according to the input jack on your TV monitor, projector, or AV amplifier (receiver).



: Signal flow

A If you are connecting to a video input jack

Connect the yellow plug of the audio/video cord (supplied) to the yellow (video) jack. You will enjoy standard quality images.
Do not press the PROGRESSIVE button on the front panel if you have connected the TV to this jack (page 17).



Use the red and white plugs to connect to the audio input jacks (page 19). (Do this if you are connecting to a TV only.)

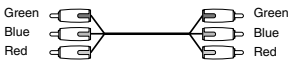
→continued

B If you are connecting to an S VIDEO input jack

Connect an S VIDEO cord (not supplied). You will enjoy high quality images.
Do not press the PROGRESSIVE button on the front panel if you have connected the TV to this jack (page 17).

C If you are connecting to a monitor, projector, or AV amplifier (receiver) having component video input jacks (Y, P_B, P_R)

Connect the component via the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate color reproduction and high quality images. If your TV accepts progressive (480p) format signals, you must use this connection and then press PROGRESSIVE on the front panel to accept progressive video signals. The PROGRESSIVE indicator lights up when the player outputs progressive signals. See "Using the PROGRESSIVE button" on the next page for more information.

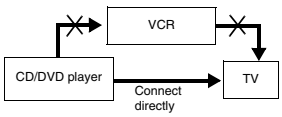


When connecting to a wide screen TV

Depending on the disc, the image may not fit your TV screen. If you want to change the aspect ratio, please refer to page 55.

Notes

- Connect the player directly to the TV. If you pass the player signals via the VCR, etc., you may not receive a clear image on the TV screen.



- Consumers should note that not all high definition television sets are fully compatible with this product and may cause artifacts to be displayed in the picture. In the case of 480 progressive scan picture problems, it is recommended that the user switch the connection to the 'standard definition' output. If there are questions regarding our TV set compatibility with this model 480p DVD player, please contact our customer service center.

Using the PROGRESSIVE button

You can fine-tune the Progressive 480p video signal output when you press PROGRESSIVE on the front panel (the PROGRESSIVE indicator lights up) and connect the player using the COMPONENT VIDEO OUT jacks to a TV that is able to accept the video signal in progressive format.
Only press the PROGRESSIVE button if you have connected a progressive signal compatible TV to the COMPONENT VIDEO OUT jacks using a component video cord (not supplied). Using the LINE OUT (VIDEO) jack or the S VIDEO OUT jack will cause the TV picture to become unclear or go blank when you press the PROGRESSIVE button. In this case, press the PROGRESSIVE button so that the PROGRESSIVE indicator turns off.

Press PROGRESSIVE repeatedly to turn the displays as follows:

NORMAL (INTERLACE)* → PROGRESSIVE* → NORMAL (INTERLACE)*

* Appears as NORMAL or PROGRESSIVE on the front panel display

• NORMAL (INTERLACE)
Select this when you are connected to a standard (Interlace format) TV.

• PROGRESSIVE
Select this when you are connected to a progressive TV.

Note

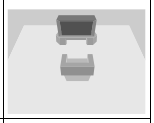
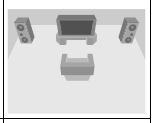
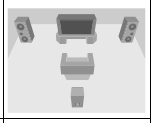
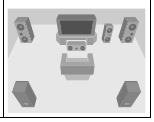
If you connect the player to a standard (interlace format) TV and press the PROGERSSIVE button (PROGRESSIVE indicator lights up), the TV picture will be unclear or go blank.

Step 4: Connecting the Audio Cords

Refer to the chart below to select the connection that best suits your system. Be sure to also read the instructions for the components you wish to connect.

Select a connection

Select one of the following connections, A through D.

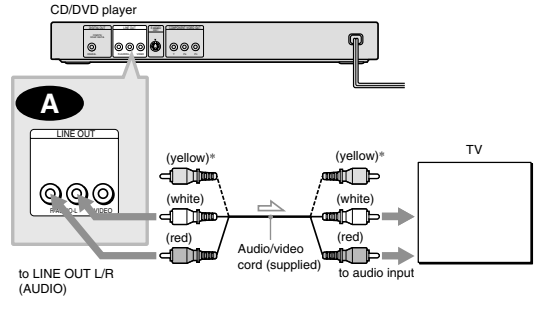
Components to be connected	Connection	Your setup (example)
TV	A (page 19)	
Stereo amplifier (receiver) and two speakers or **MD deck/DAT deck**	B (page 20)	
AV amplifier (receiver) having a Dolby* Surround (Pro Logic) decoder and 3 to 6 speakers	C (page 21)	
AV amplifier (receiver) with digital input jacks having a Dolby Digital or DTS decoder and 6 speakers**	D (page 22)	

Hint
If you connect an AV amplifier (receiver) that conforms to the 96 kHz sampling frequency, use connection D.

* Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.
** "DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

A Connecting to your TV

This connection will use your TV's speakers for sound.

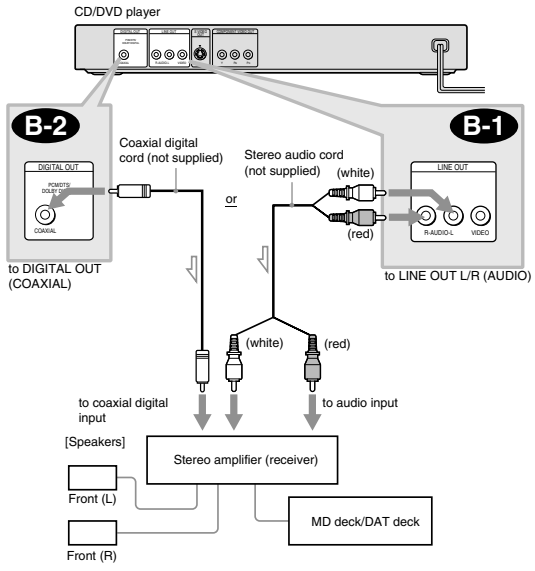


* The yellow plug is used for video signals (page 15).

Hint
When connecting to a monaural TV, use a stereo-mono conversion cord (not supplied). Connect the LINE OUT L/R (AUDIO) jacks to the TV's audio input jack.

B Connecting to a stereo amplifier (receiver) and 2 speakers/Connecting to an MD deck or DAT deck

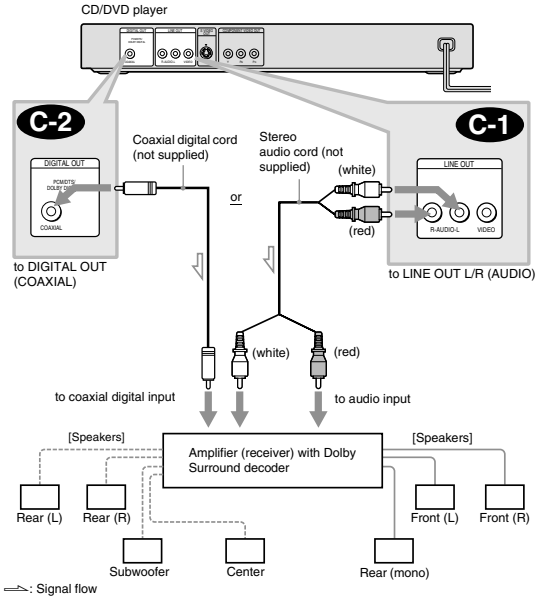
If the stereo amplifier (receiver) has audio input jacks L and R only, use B-1. If the amplifier (receiver) has a digital input jack, or when connecting to an MD deck or DAT deck, use B-2. In this case, you can also connect the player directly to the MD deck or DAT deck without using your stereo amplifier (receiver).



→continued

C Connecting to an AV amplifier (receiver) having a Dolby Surround (Pro Logic) decoder and 3 to 6 speakers

You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multi-channel audio (Dolby Digital) discs.
If your amplifier (receiver) has L and R audio input jacks only, use C-1. If your amplifier (receiver) has a digital input jack, use C-2.



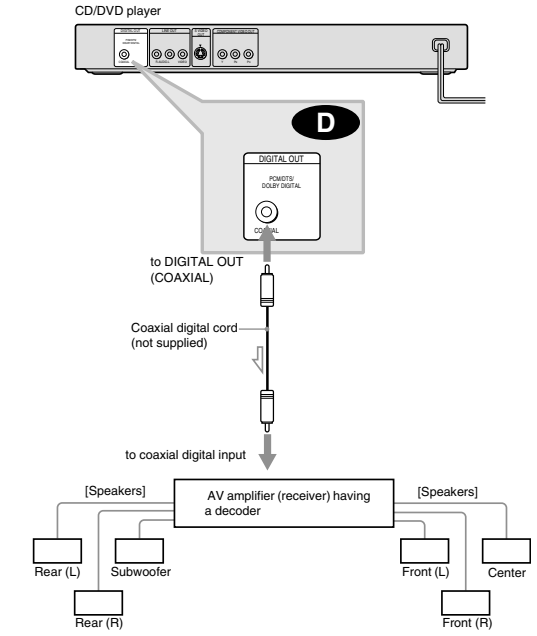
Note

When connecting 6 speakers, replace the monaural rear speaker with a center speaker, 2 rear speakers and a subwoofer.

➡continued

D Connecting to an AV amplifier (receiver) with a digital input jack having a Dolby Digital or DTS decoder and 6 speakers

This connection will allow you to use the Dolby Digital or DTS decoder function of your AV amplifier (receiver).



Hint

Use connection D when connecting to 7 or more speakers (6.1 ch or more).

Notes

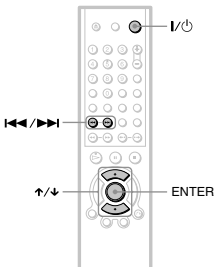
- After you have completed the connection, be sure to set "DOLBY DIGITAL" to "DOLBY DIGITAL" and "DTS" to "ON" in Quick Setup (page 23).
- In order to listen to DTS sound tracks, you must use this connection. DTS sound tracks are not output through the LINE OUT L/R (AUDIO) jacks, even if you set "DTS" to "ON" in Quick Setup (page 23).
- When you connect an amplifier (receiver) that conforms to the 96 kHz sampling frequency, set "48kHz/96kHz PCM" in "AUDIO SETUP" to "96kHz/24bit" (page 58).

Step 5: Connecting the Power Cord

Plug the player and TV power cords into an AC outlet.

Step 6: Quick Setup

Follow the steps below to make the minimum number of basic adjustments for using the player. To skip an adjustment, press ▶▶|. To return to the previous adjustment, press |◀◀.



1 Turn on the TV.

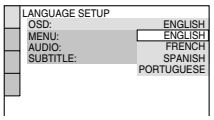
2 Press I/⏻.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

"Press [ENTER] to run QUICK SETUP" appears at the bottom of the screen. If this message does not appear, select "QUICK" under "SETUP" in the Control Menu to run Quick Setup (page 54).

4 Press ENTER without inserting a disc.

The Setup Display for selecting the language used in the on-screen display appears.

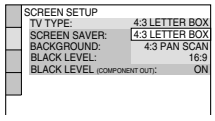


5 Press ↑/↓ to select a language.

The player uses the language selected here to display the menu and subtitles as well.

6 Press ENTER.

The Setup Display for selecting the aspect ratio of the TV to be connected appears.


SCREEN SETUP
TV TYPE: 4:3 LETTER BOX
SCREEN SAVER: 4:3 LETTER BOX
BACKGROUND: 4:3 PAN SCAN
BLACK LEVEL: 16:9
BLACK LEVEL (COMPONENT OUT): ON

7 Press ↑/↓ to select the setting that matches your TV type.

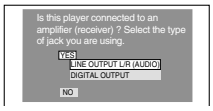
◆ If you have a 4:3 standard TV
- 4:3 LETTER BOX or 4:3 PAN SCAN (page 55)

◆ If you have a wide-screen TV or a 4:3 standard TV with a wide-screen mode
- 16:9 (page 55)

8 Press ENTER.

The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.

➡continued


Is this player connected to an amplifier (receiver) ? Select the type of jack you are using.
YES
LINE OUTPUT L/R (AUDIO)
DIGITAL OUTPUT
NO

9 Press ↑/↓ to select the type of jack (if any) you are using to connect to an amplifier (receiver), then press ENTER.

Choose the item that matches the audio connection you selected on pages 19 to 22 (A through D).

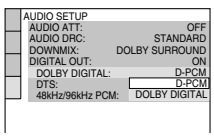
A
- If you connect just a TV and nothing else, select "NO." Quick Setup is finished and connections are complete.

B-1 C-1
- Select "LINE OUTPUT L/R (AUDIO)." Quick Setup is finished and connections are complete.

B-2 C-2 D
- Select "DIGITAL OUTPUT." The Setup Display for "DOLBY DIGITAL" appears.

10 Press ↑/↓ to select the type of Dolby Digital signal you wish to send to your amplifier (receiver).

Choose the signal that matches the audio connection you selected on pages 20 to 22 (B through D).

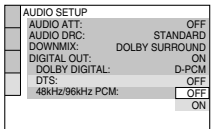


B-2 C-2
- D-PCM (page 58)

D
- DOLBY DIGITAL (only if the amplifier (receiver) has a Dolby Digital decoder) (page 58)

11 Press ENTER.

"DTS" is selected.



12 Press ↑/↓ to select whether or not you wish to send a DTS signal to your amplifier (receiver).

Choose the item that matches the audio connection you selected on pages 20 to 22 (B through D).

B-2 C-2
- OFF (page 58)

D
- ON (only if the amplifier (receiver) has a DTS decoder) (page 58)

13 Press ENTER.

Quick Setup is finished. All connections and setup operations are complete.

Enjoying the surround sound effects

To enjoy the surround sound effects of this player or your amplifier (receiver), set the following items as described below for the audio connection you selected on pages 20 to 22 (B through D). Each of these is the default setting and does not need to be adjusted when you first connect the player. Refer to page 53 for using the Setup Display.

Audio Connection (pages 19 to 22)

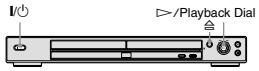
A
- No additional settings are needed.

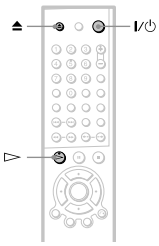
B-1 C-1
- Set "DOWNMIX" to "DOLBY SURROUND" (page 58)
- If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 57)

B-2 C-2 D
- Set "DOWNMIX" to "DOLBY SURROUND" (page 58)
- Set "DIGITAL OUT" to "ON" (page 58)

Playing Discs DVD VCD CD DATA CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the operating instructions supplied with your disc.





1 Turn on your TV.

2 Press I/⏻.

The player turns on.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

◆ When using an amplifier (receiver)
Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the player.

4 Press ⏏ on the player, and place a disc on the disc tray.

With the playback side facing down

5 Press ▷.

The disc tray closes, and the player starts playback (continuous play). Adjust the volume on the TV or the amplifier (receiver).
Depending on the disc, a menu may appear on the TV screen. For DVDs, see page 28. For VIDEO CDs, see page 28.

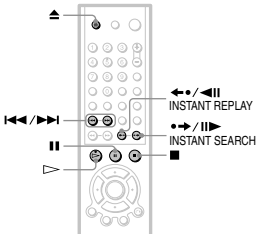
To turn off the player

Press I/⏻. The player enters standby mode.

Hint

You can have the player turn off automatically whenever you leave it in stop mode for more than 30 minutes. To turn on this function, set "AUTO POWER OFF" in "CUSTOM SETUP" to "ON" (page 56).

Additional operations



To	Operation
Stop	Press ■
Pause	Press II
Resume play after pause	Press II or ▷
Go to the next chapter, track, or scene in continuous play mode	Press ▶▶I on the remote, or briefly turn the ▷/Playback Dial* on the player clockwise
Go back to the previous chapter, track, or scene in continuous play mode	Press I◀◀ on the remote, or briefly turn the ▷/Playback Dial* on the player counterclockwise
Stop play and remove the disc	Press ⏏
Replay the previous scene**	Press ←●/◀II INSTANT REPLAY during playback
Briefly fast forward the current scene***	Press ●→/II▶ INSTANT SEARCH during playback

* For more details about the ▷/Playback Dial, see page 36.
** For DVD VIDEOs and the DVD-RWs/DVD-Rs only
***For DVD VIDEOs and the DVD-RWs/DVD-Rs or DVD+RWs only

Hints

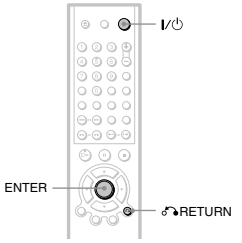
- The Instant Replay function is useful when you want to review a scene or dialog that you missed.
- The Instant Search function is useful when you want to pass over a scene that you don't want to watch.

Note

You may not be able to use the Instant Replay or Instant Search function with some scenes.

Locking the disc tray (Child Lock)

You can lock the disc tray to prevent children from opening it.



When the player is in standby mode, press RETURN, ENTER, and then I/⏻ on the remote.

The player turns on and "LOCKED" appears on the front panel display.
The ⏏ button on the player or the remote does not work while the Child Lock is set.

To unlock the disc tray

When the player is in standby mode, press RETURN, ENTER, and then I/⏻ again.

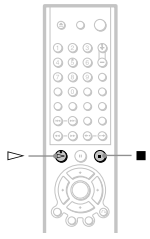
Note

Even if you select "RESET" under "SETUP" in the Control Menu (page 54), the disc tray remains locked.

Resuming Playback from the Point Where You Stopped the Disc

(Multi-disc Resume) DVD VCD

The player stores the point where you stopped the disc for up to 6 discs and resumes playback the next time you insert the same disc. When you store a resume playback point for the seventh disc, the resume playback point for the first disc is deleted.



1 While playing a disc, press ■ to stop playback.

"RESUME" appears on the front panel display.

2 Press ▷.

The player starts playback from the point where you stopped the disc in Step 1.

Hints

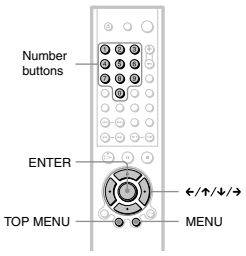
- To play from the beginning of the disc, press ■ twice, then press ▷.
- For CDs and DATA CDs, the player remembers the resume playback point for the current disc unless the disc tray is opened, the power cord is disconnected, or the player enters standby mode.

Notes

- "MULTI-DISC RESUME" in "CUSTOM SETUP" must be set to "ON" (default) for this function to work (page 57).
- The resume playback point for the current disc is cleared when:
  – you change the play mode.
  – you change the settings on the Setup Display.
- This function may not work with some discs.
- Resume Play does not work during Shuffle Play and Program Play.
- If "MULTI-DISC RESUME" in "CUSTOM SETUP" is set to "ON" and you playback a recorded disc such as DVD-RW, the player may playback other recorded discs from the same resume point. To play from the beginning, press ■ twice and then press ▷.

Using the DVD's Menu DVD

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the TOP MENU button.
When you play DVDs that allow you to select items such as the language for the subtitles and the language for the sound, select these items using the MENU button.



1 Press TOP MENU or MENU.

The disc's menu appears on the TV screen.
The contents of the menu vary from disc to disc.

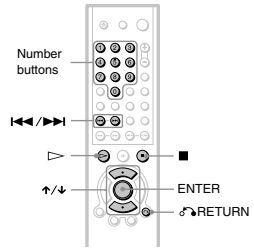
2 Press ←/↑/↓/→ or the number buttons to select the item you want to play or change.

If you press the number buttons, the following display appears.
Press the number buttons to select the item you want.

3 Press ENTER.

Playing VIDEO CDs with PBC Functions (PBC Playback) VCD

PBC (Playback Control) allows you to play VIDEO CDs interactively by following the menu on the TV screen.



1 Start playing a VIDEO CD with PBC functions.

The menu for your selection appears.

2 Select the item number you want by pressing the number buttons.

3 Press ENTER.

4 Follow the instructions in the menu for interactive operations.

Refer to the instructions supplied with the disc, as the operating procedure may differ depending on the VIDEO CD.

To return to the menu

Press RETURN.

Hint

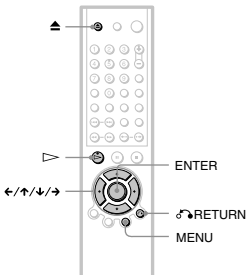
To play without using PBC, press I◄◄/►►I or the number buttons while the player is stopped to select a track, then press ▷ or ENTER.
"Play without PBC" appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu.
To return to PBC playback, press ■ twice then press ▷.

Note

Depending on the VIDEO CD, "Press ENTER" in Step 3 may appear as "Press SELECT" in the instructions supplied with the disc. In this case, press ▷.

Playing an MP3 Audio Track DATA CD

You can play DATA CDs (CD-ROMs/CD-Rs/CD-RWs) recorded in MP3 (MPEG1 Audio Layer 3) format.



1 Press ⏏ and place a DATA CD on the disc tray.

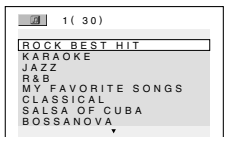
2 Press ▷.

The disc tray closes, and the player starts to play the first MP3 audio track in the first album on the disc.

Selecting an album and track

1 Press MENU.

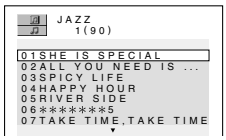
The list of MP3 albums recorded on the DATA CD appears.



➞continued

2 Select an album using ↑/↓ and press ENTER.

The list of tracks contained in the album appears.



3 Select a track using ↑/↓ and press ENTER.

The selected track starts playing.
When a track or album is being played, its title is shaded.

To go to the next or previous page

Press → or ←.

To return to the previous display

Press RETURN.

To turn off the display

Press MENU.

Notes

- Only the letters in the alphabet and numbers can be used for album or track names. Anything else is displayed as "✳".
- ID3 tags cannot be displayed.

About MP3 audio tracks

You can play MP3 audio tracks on CD-ROMs or CD-Rs/CD-RWs. However, the discs must be recorded according to ISO9660 level 1, level 2, or Joliet format for the player to recognize the tracks.
You can also play discs recorded in Multi Session.
See the instructions of the CD-R/CD-RW device or recording software (not supplied) for details on the recording format.

To play a Multi Session CD

This player can play Multi Session CDs when an MP3 audio track is located in the first session. Any subsequent MP3 audio tracks, recorded in the later sessions, can also be played back.
When audio tracks and images in music CD format or video CD format are recorded in the first session, only the first session will be played back.

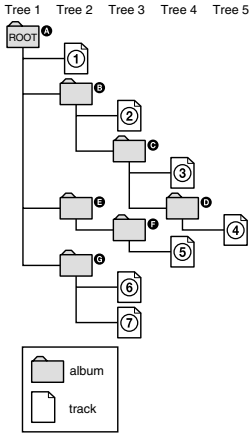
Notes

- If you put the extension ".MP3" to data not in MP3 format, the player cannot recognize the data properly and will generate a loud noise which could damage your speaker system.
- The player cannot play audio tracks in MP3PRO format.

The Playback order of MP3 audio tracks

The playback order of albums and tracks recorded on a DATA CD is as follows.

◆Structure of disc contents



30

When you insert a DATA CD and press ▷, the numbered tracks are played sequentially, from ① through ⑦. Any sub-albums/tracks contained within a currently selected album take priority over the next album in the same tree. (Example: C contains D so ④ is played before ⑤.)
When you press MENU and the list of MP3 albums appears (page 29), the albums are arranged in the following order: A → B → C → D → F → G. Albums that do not contain tracks (such as album E) do not appear in the list.

Hints

- If you add numbers (01, 02, 03, etc.) to the front of the track file names, the tracks will be played in that order.
- Since a disc with many trees takes longer to start playback, it is recommended that you create albums of no more than two trees.

Notes

- Depending on the software you use to create the DATA CD, the playback order may differ from the illustration above.
- The playback order above may not be applicable if there are more than a total of 200 albums and tracks in the DATA CD.
- The player can recognize up to 100 albums (the player will count just albums, including albums that do not contain MP3 audio tracks). The player will not play any albums beyond the first 100 albums. Of the first 100 albums, the player will play no more than a combined total of 200 albums and tracks.

Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play)

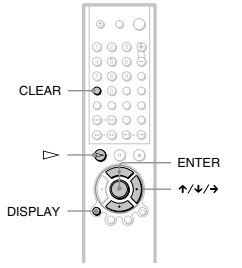
You can set the following play modes:
- Program Play (page 31)
- Shuffle Play (page 33)
- Repeat Play (page 34)
- A-B Repeat Play (page 34)

Note

The play mode is canceled when:
– you open the disc tray.
– the player enters standby mode by pressing I/⏻.

Creating your own program (Program Play) DVD VCD CD

You can play the contents of a disc in the order you want by arranging the order of the titles, chapters, or tracks on the disc to create your own program. You can program up to 99 titles, chapters, and tracks.



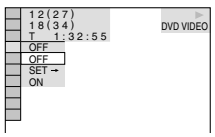
1 Press DISPLAY.

The Control Menu appears.

2 Press ↑/↓ to select (PROGRAM), then press ENTER.

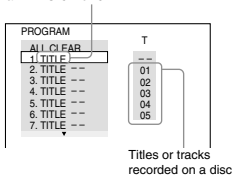
The options for "PROGRAM" appear.

➞continued



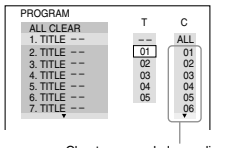
3 Press ↑/↓ to select "SET →," then press ENTER.

"TRACK" is displayed when you play a VIDEO CD or CD.



4 Press →.

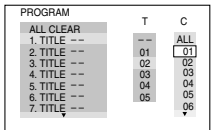
The cursor moves to the title or track row "T" (in this case, "01").



5 Select the title, chapter, or track you want to program.

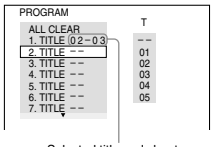
◆ When playing a DVD

For example, select chapter "03" of title "02."
Press ↑/↓ to select "02" under "T," then press ENTER.



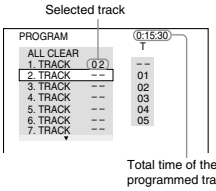
32

Next, press ↑/↓ to select "03" under "C," then press ENTER.



◆ When playing a VIDEO CD or CD

For example, select track "02."
Press ↑/↓ to select "02" under "T," then press ENTER.



6 To program other titles, chapters, or tracks, repeat Steps 4 to 5.

The programmed titles, chapters, and tracks are displayed in the selected order.

7 Press ▷ to start Program Play.

Program Play begins.
When the program ends, you can restart the same program again by pressing ▷.

To return to normal play

Press CLEAR, or select "OFF" in Step 3. To play the same program again, select "ON" in Step 3 and press ENTER.

To change or cancel a program

1 Follow Steps 1 through 3 of "Creating your own program (Program Play)."
2 Select the program number of the title, chapter, or track you want to change or cancel using ↑/↓, and press →.
3 Follow Step 5 for new programming. To cancel a program, select "--" under "T," then press ENTER.

To cancel all of the titles, chapters, or tracks in the programmed order

1 Follow Steps 1 through 3 of "Creating your own program (Program Play)."
2 Press ↑ and select "ALL CLEAR."
3 Press ENTER.

Hint

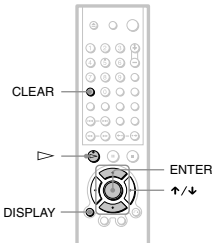
You can do Repeat Play or Shuffle Play of the programmed titles, chapters, or tracks. During Program Play, follow the Steps of "Repeat Play" (page 34) or "Shuffle Play" (page 33).

Note

You cannot use this function with VIDEO CDs and Super VCD with PBC playback.

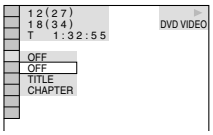
Playing in random order (Shuffle Play) DVD VCD CD

You can have the player "shuffle" titles, chapters, or tracks. Subsequent "shuffling" may produce a different playing order.

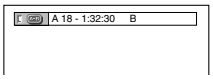


1 Press DISPLAY during playback.
The Control Menu appears.

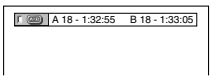
2 Press ↑/↓ to select (SHUFFLE), then press ENTER.
The options for "SHUFFLE" appear.



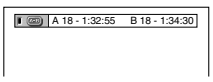
3 Press ↑/↓ to select "SET →," then press ENTER.
The "A-B REPEAT" setting bar appears.



4 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.
The starting point (point A) is set.



5 When you reach the ending point (point B), press ENTER again.
The set points are displayed and the player starts repeating this specific portion.



To return to normal play

Press CLEAR, or select "OFF" in Step 3.

Note

When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Program Play are canceled.

3 Press ↑/↓ to select the item to be shuffled.

◆ **When playing a DVD**
• TITLE
• CHAPTER

◆ **When playing a VIDEO CD or CD**
• TRACK

◆ **When Program Play is activated**
• ON: shuffles titles, chapters, or tracks selected in Program Play.

4 Press ENTER.
Shuffle Play starts.

To return to normal play

Press CLEAR, or select "OFF" in Step 3.

Hints

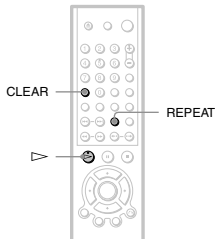
• You can set Shuffle Play while the player is stopped. After selecting the "SHUFFLE" option, press ▷. Shuffle Play starts.
• Up to 200 chapters in a disc can be played in random order when "CHAPTER" is selected.

Note

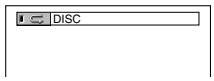
You cannot use this function with VIDEO CDs with PBC playback.

Playing repeatedly (Repeat Play) DVD VCD CD DATA CD

You can play all of the titles or tracks on a disc or a single title, chapter, or track repeatedly.
You can use a combination of Shuffle or Program Play modes.



1 Press REPEAT during playback.
The following display appears.



2 Press REPEAT repeatedly to select the item to be repeated.

◆ **When playing a DVD**
• DISC: repeats all of the titles.
• TITLE: repeats the current title on a disc.
• CHAPTER: repeats the current chapter.

◆ **When playing a VIDEO CD or CD**
• DISC: repeats all of the tracks.
• TRACK: repeats the current track.

◆ **When playing a DATA CD (MP3 audio)**
• DISC: repeats all of the albums.
• ALBUM: repeats the current album.
• TRACK: repeats the current track.

◆ **When Program Play or Shuffle Play is activated**
• ON: repeats Program Play or Shuffle Play.

To return to normal play

Press CLEAR, or select "OFF" in Step 2.

Hints

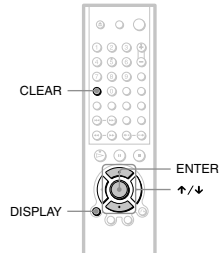
• You can set Repeat Play while the player is stopped. After selecting the "REPEAT" option, press ▷. Repeat Play starts.
• You can also select "REPEAT" from the Control Menu (page 12).

Note

You cannot use this function with VIDEO CDs with PBC playback.

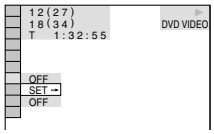
Repeating a specific portion (A-B Repeat Play) DVD VCD CD

You can play a specific portion of a title, chapter or track repeatedly. (This function is useful when you want to memorize lyrics, etc.)



1 Press DISPLAY during playback.
The Control Menu appears.

2 Press ↑/↓ to select (A-B REPEAT), then press ENTER.
The options for "A-B REPEAT" appear.



3 Press ↑/↓ to select "SET →," then press ENTER.
The "A-B REPEAT" setting bar appears.

4 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.
The starting point (point A) is set.

5 When you reach the ending point (point B), press ENTER again.
The set points are displayed and the player starts repeating this specific portion.

To return to normal play

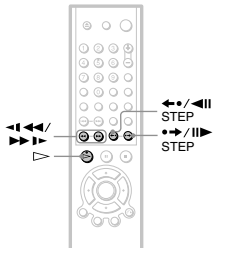
Press CLEAR, or select "OFF" in Step 3.

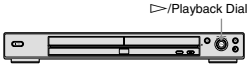
Note

When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Program Play are canceled.

Searching for a Particular Point on a Disc (Search, Scan, Slow-motion Play, Freeze Frame)

You can quickly locate a particular point on a disc by monitoring the picture or playing back slowly.





Note

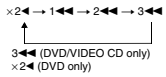
Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

Locating a point quickly by playing a disc in fast forward or fast reverse (Scan) DVD VCD CD DATA CD

Press ◄◄ or ►► while playing a disc. When you find the point you want, press ▷ to return to normal speed. Each time you press ◄◄ or ►► during scan, the playback speed changes. With each press the indication changes as shown below. Actual speeds may differ with some discs.

Playback direction

Opposite direction



The "×2►"/ "×2◄" playback speed is about twice the normal speed.
The "3►►"/"3◄◄" playback speed is faster than "2►►"/"2◄◄" and the "2►►"/"2◄◄" playback speed is faster than "1►►"/"1◄◄."

Watching frame by frame (Slow-motion play) DVD VCD

Press ◄▮ ◄◄ or ►► ▮► when the player is in pause mode. To return to the normal speed, press ▷.
Each time you press ◄▮ ◄◄ or ►► ▮► during Slow-motion play, the playback speed changes. Two speeds are available. With each press the indication changes as follows:

Playback direction
2 ▮► ↔ 1 ▮►

Opposite direction (DVD only)
2 ◄▮ ↔ 1 ◄▮

The "2 ▮►"/"2 ◄▮" playback speed is slower than "1 ▮►"/"1 ◄▮."

Using the Playback Dial on the player DVD VCD CD DATA CD

You can search for a particular point on a disc in various ways using the Playback Dial.

To go to the next chapter/track/scene

During playback, briefly turn the Playback Dial clockwise to skip to the next chapter/track/scene, or counterclockwise to skip to the previous ones.

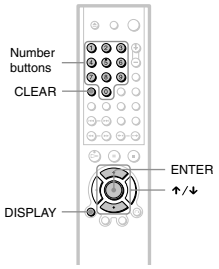
To locate a point quickly (Search)
During playback, turn and hold the Playback Dial clockwise to locate a point in the playback direction, or counterclockwise to locate a point in the opposite direction. When you find the point you want, release the dial to return to normal playback speed.

Playing one frame at a time (Freeze Frame) DVD VCD

When the player is in the pause mode, press ●➔/II► STEP to go to the next frame. Press ➔●/◄II STEP to go to the preceding frame (DVD only). To return to normal playback, press ▷.

Searching for a Title/ Chapter/Track/Scene, etc. DVD VCD CD DATA CD

You can search a DVD by title or chapter, and you can search a VIDEO CD/CD/DATA CD by track, index, or scene. As titles and tracks are assigned unique numbers on the disc, you can select the desired one by entering its number. Or, you can search for a scene using the time code.



1 Press DISPLAY.
The Control Menu appears.

2 Press ↑/↓ to select the search method.

◆ When playing a DVD
TITLE
CHAPTER
TIME/TEXT
Select "TIME/TEXT" to search for a starting point by inputting the time code.

◆ When playing a VIDEO CD or Super VCD without PBC Playback
TRACK
INDEX

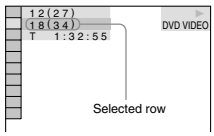
➔continued

◆ When playing a VIDEO CD or Super VCD with PBC Playback
SCENE
INDEX

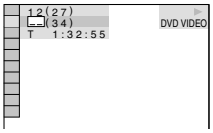
◆ When playing a CD
TRACK

◆ When playing a DATA CD (MP3 audio)
ALBUM
TRACK

Example: when you select CHAPTER
"** (**)" is selected (** refers to a number). The number in parentheses indicates the total number of titles, chapters, tracks, indexes or scenes.



3 Press ENTER.
"** (**)" changes to "-- (**)."



4 Press the number buttons to select the title, chapter, track, index, or scene number you want to search.

If you make a mistake
Cancel the number by pressing CLEAR, then select another number.

5 Press ENTER.
The player starts playback from the selected number.

To search for a scene using the time code (DVD only)

1 In Step 2, select TIME/TEXT.
"T **:**:**" (playing time of the current title) is selected.

2 Press ENTER.
"T **:**:**" changes to "T --:--:--."

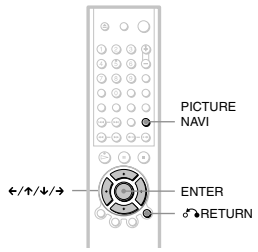
3 Input the time code using the number buttons, then press ENTER.
For example, to find the scene at 2 hours, 10 minutes, and 20 seconds after the beginning, just enter "2:10:20."

Hints
- When the Control Menu display is turned off, you can search for a chapter (DVD) or track (CD) by pressing the number buttons and ENTER.
- You can display the first scene of titles, chapters, or tracks recorded on the disc on a screen divided into 9 sections. You can start playback directly by selecting one of the scenes. For details, see "Searching by Scene (PICTURE NAVIGATION)" on the next page.

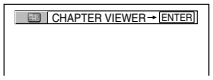
Notes
- The title, chapter, or track number displayed is the same number recorded on the disc.
- You cannot search for a scene on a DVD+RW using the time code.

Searching by Scene (PICTURE NAVIGATION) DVD VCD

You can divide the screen into 9 subscreens and quickly find the desired scene.

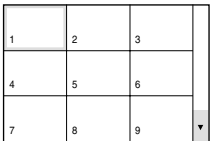


1 Press PICTURE NAVI during playback.
The following display appears.



2 Press PICTURE NAVI repeatedly to select an item.
- CHAPTER VIEWER (DVD VIDEO only)
- TITLE VIEWER (DVD VIDEO only)
- TRACK VIEWER (VIDEO CD only)

3 Press ENTER.
The following display appears.



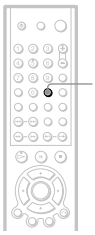
4 Press ←/↑/↓/→ to select a title, chapter, or track, and press ENTER.
Playback starts.

Hint
If there are more than 9 titles, chapters, or tracks, ▼ is displayed at the bottom right of the screen. To display the additional titles, chapters, or tracks, select the bottom scene and press ↓. To return to the previous scene, select the top scene and press ↑.

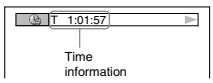
Notes
- Depending on the disc, you may not be able to select some items.
- The sound is muted when using this function.

Checking the Playing Time and Remaining Time DVD VCD CD DATA CD

You can check the playing time and remaining time of the current title, chapter, or track. Also, you can check the DVD/CD text or track name (MP3 audio) recorded on the disc.



1 Press TIME/TEXT during playback.
The following display appears.



2 Press TIME/TEXT repeatedly to change the time information.
The available time information depends upon the type of disc you are playing.

◆ When playing a DVD
- T ∗:∗:∗ (hours: minutes: seconds)
  Playing time of the current title
- T–∗:∗:∗
  Remaining time of the current title
- C ∗:∗:∗
  Playing time of the current chapter
- C–∗:∗:∗
  Remaining time of the current chapter

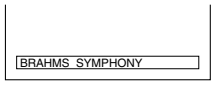
◆ When playing a VIDEO CD or Super VCD (with PBC functions)
- ∗:∗ (minutes: seconds)
  Playing time of the current scene

◆ When playing a VIDEO CD, Super VCD (without PBC functions) or CD
- T ∗:∗ (minutes: seconds)
  Playing time of the current track
- T–∗:∗
  Remaining time of the current track
- D ∗:∗
  Playing time of the current disc
- D–∗:∗
  Remaining time of the current disc

◆ When playing a DATA CD (MP3 audio)
- T ∗:∗ (minutes: seconds)
  Playing time of the current track

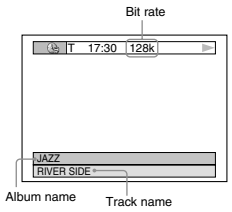
Checking the play information of the Disk

To check DVD/CD text
Press TIME/TEXT repeatedly in Step 2 to display text recorded on the DVD/CD.
The DVD/CD text appears only when text is recorded in the disc. You cannot change the text. If the disc does not contain text, "NO TEXT" appears.



To check DATA CD (MP3 audio) text

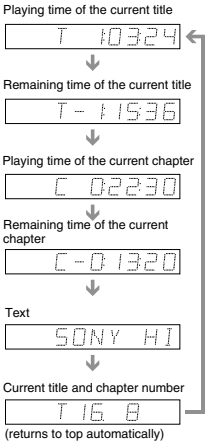
By pressing TIME/TEXT while playing MP3 audio tracks on a DATA CD, the track name and album name appear. You can also display the audio bit rate (the amount of data per second of the current audio) on your TV screen.



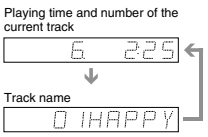
Checking the information on the front panel display

You can view the time information and text displayed on the TV screen also on the front panel display. The information on the front panel display changes as follows when you change the time information on your TV screen.

When playing a DVD

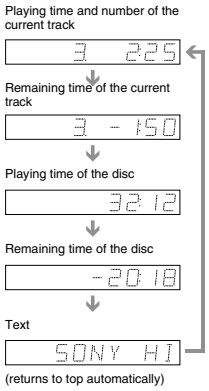


When playing a DATA CD (MP3 audio)



→continued

When playing a VIDEO CD, Super VCD (without PBC functions) or CD



Hints

- When playing a VIDEO CDs without PBC functions, track number and index number are displayed after text.
- When playing VIDEO CDs with PBC functions, the scene number and the playing time are displayed.
- Long text that does not fit in a single line will scroll across the front panel display.
- You can also check the time information and text using the Control Menu (page 12).

Notes

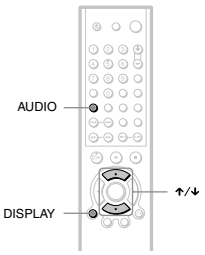
- Depending on the type of disc being played, the DVD/CD text or track name may not be displayed.
- The player can only display the first level of the DVD/CD text, such as the disc name or title.
- Playing time of MP3 audio tracks may not be displayed correctly.

Sound Adjustments

Changing the Sound

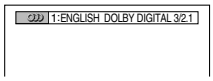
DVD VCD CD DATA CD

When playing a DVD recorded in multiple audio formats (PCM, Dolby Digital, or DTS), you can change the audio format. If the DVD is recorded with multilingual tracks, you can also change the language.
With CDs, DATA CDs, or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can hear the instruments from both speakers by selecting the left channel.



1 Press AUDIO during playback.

The following display appears.



2 Press AUDIO repeatedly to select the desired audio signal.

◆ When playing a DVD

Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 65 to see which language the code represents.
When the same language is displayed two or more times, the DVD is recorded in multiple audio formats.

◆ When playing a VIDEO CD, CD, or DATA CD (MP3 audio)

The default setting is underlined.
- STEREO: The standard stereo sound
- 1/L: The sound of the left channel (monaural)
- 2/R: The sound of the right channel (monaural)

◆ When playing a Super VCD

The default setting is underlined.
- 1:STEREO: The stereo sound of the audio track 1
- 1:1/L: The sound of the left channel of the audio track 1 (monaural)
- 1:2/R: The sound of the right channel of the audio track 1 (monaural)
- 2:STEREO: The stereo sound of the audio track 2
- 2:1/L: The sound of the left channel of the audio track 2 (monaural)
- 2:2/R: The sound of the right channel of the audio track 2 (monaural)

Note

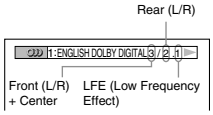
While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "2:STEREO," "2:1/L," or "2:2/R."

→continued

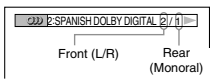
Checking the audio signal format DVD

If you press AUDIO repeatedly during playback, the format of the current audio signal (Dolby Digital, DTS, PCM, etc.) appears as shown below.

Example:
Dolby Digital 5.1 ch



Example:
Dolby Digital 3 ch



About audio signals

Audio signals recorded in a disc contain the sound elements (channels) shown below. Each channel is output from a separate speaker.
- Front (L)
- Front (R)
- Center
- Rear (L)
- Rear (R)
- Rear (Monaural): This signal can be either the Dolby Surround Sound processed signals or the Dolby Digital sound's monaural rear audio signals.
- LFE (Low Frequency Effect) signal

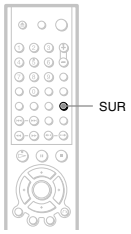
Note

If "DTS" is set to "OFF" in "AUDIO SETUP" (page 58) the DTS track selection option will not appear on the screen even if the disc contains DTS tracks.

Surround Mode Settings

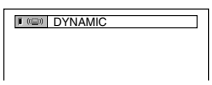
DVD

When you connect a stereo TV or 2 front speakers, you can enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers.
If the player is set up to output the signal from the DIGITAL OUT (COAXIAL) jack, the surround effect will only be heard when "DOLBY DIGITAL" is set to "D-PCM" in "AUDIO SETUP" (page 58).



1 Press SUR during playback.

The following display appears.



2 Press SUR repeatedly to select one of the surround modes.

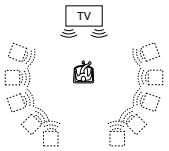
Refer to the following explanations given for each item.
- DYNAMIC
- WIDE
- NIGHT
- STANDARD

To cancel the setting

Select "OFF" in Step 2.

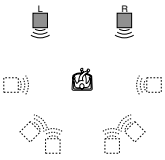
◆DYNAMIC
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (shown below).
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

◆WIDE
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below.
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.



◆NIGHT
Large sounds, such as explosions, are suppressed, but the quieter sounds are unaffected. This feature is useful when you want to hear the dialogue and enjoy the surround sound effects of 'WIDE' at low volume.

◆STANDARD
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. Use this setting when you want to use surround sound with 2 separate speakers.



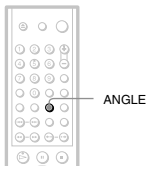
L: Front speaker (left)
R: Front speaker (right)
□: Virtual speaker

Hint
You can select surround sound modes by pressing the SURROUND button on the player.

Notes
- When the playing signal does not contain a signal for the rear speakers, the surround effects cannot be heard.
- When you select one of the surround sound modes, turn off the surround setting of the connected TV or amplifier (receiver).
- Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings.
- Not all discs will respond to the "NIGHT" function in the same way.

Changing the Angles DVD

If various angles (multi-angles) for a scene are recorded on the DVD, "" appears in the front panel display. This means that you can change the viewing angle.



1 Press ANGLE during playback.
The number of the angle appears on the display.

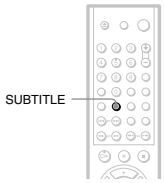
2 Press ANGLE repeatedly to select the angle number.
The scene changes to the selected angle.

Note
Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

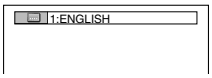
Displaying the Subtitles

DVD

If subtitles are recorded on the discs, you can change the subtitles or turn them on and off whenever you want while playing a DVD.



1 Press SUBTITLE during playback.
The following display appears.



2 Press SUBTITLE repeatedly to select the setting.

When playing a DVD
Select the language.
Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 65 to see which language the code represents.

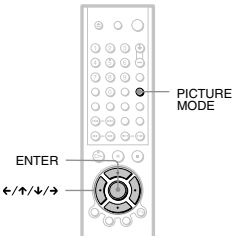
To turn off the subtitles
Select "OFF" in Step 2.

Note
Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. You also may not be able to turn them off.

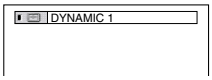
Adjusting the Playback Picture (CUSTOM PICTURE MODE)

DVD VCD

You can adjust the video signal of the DVD or VIDEO CD from the player to obtain the picture quality you want. Choose the setting that best suits the program you are watching.



1 Press PICTURE MODE during playback.
The following display appears.



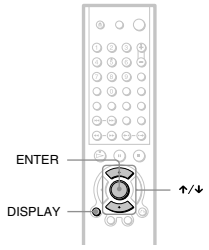
2 Press PICTURE MODE repeatedly to select the setting you want.
The default setting is underlined.
- STANDARD: displays a standard picture.
- DYNAMIC 1: produces a bold dynamic picture by increasing the picture contrast and the color intensity.
- DYNAMIC 2: produces a more dynamic picture than DYNAMIC 1 by further increasing the picture contrast and the color intensity.
- CINEMA 1: enhances details in dark areas by increasing the black level.
- CINEMA 2: White colors become brighter and black colors become richer, and the color contrast is increased.

Hint
When you watch a movie, "CINEMA 1" or "CINEMA 2" is recommended.

Sharpening the Outline of Image (SHARPNESS)

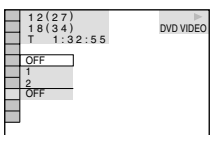
DVD VCD

The Sharpness function sharpens the outlines of images on your TV screen.



1 Press DISPLAY during playback.
The Control Menu appears.

2 Press ↑/↓ to select (SHARPNESS), then press ENTER.
The options for "SHARPNESS" appear.



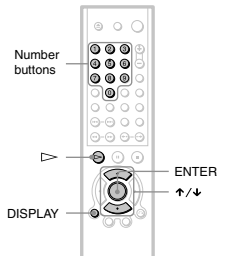
3 Press ↑/↓ to select a level.
- 1: enhances the outline.
- 2: enhances the outline more than 1.

4 Press ENTER.
The disc plays with the setting you selected.

To cancel the "SHARPNESS" setting
Select "OFF" in Step 3.

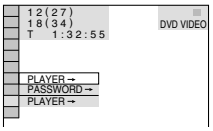
Locking Discs (PARENTAL CONTROL) DVD

Playback of some DVD VIDEOs can be limited according to a predetermined level such as the age of the users. The "PARENTAL CONTROL" function allows you to set a playback limitation level.



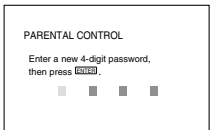
1 Press DISPLAY while the player is in stop mode.
The Control Menu appears.

2 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.
The options for "PARENTAL CONTROL" appear.



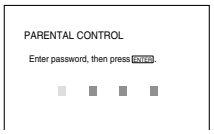
3 Press ↑/↓ to select "PLAYER →," then press ENTER.

◆ If you have not entered a password
The display for registering a new password appears.

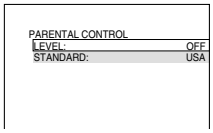


Enter a 4-digit password using the number buttons, then press ENTER. The display for confirming the password appears.

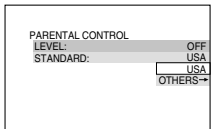
◆ When you have already registered a password
The display for entering the password appears.



4 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.
The display for setting the playback limitation level appears.



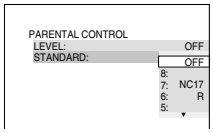
5 Press ↑/↓ to select "STANDARD," then press ENTER.
The selection items for "STANDARD" are displayed.



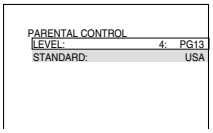
→continued

6 Press ↑/↓ to select a geographic area as the playback limitation level, then press ENTER.
The area is selected.
When you select "OTHERS →," select and enter a standard code in the table on page 51 using the number buttons.

7 Press ↑/↓ to select "LEVEL," then press ENTER.
The selection items for "LEVEL" are displayed.



8 Select the level you want using ↑/↓, then press ENTER.
Parental Control setting is complete.



The lower the value, the stricter the limitation.

To turn off the Parental Control function
Set "LEVEL" to "OFF" in Step 8.

To play a disc for which Parental Control is set

1 Insert the disc and press ▷.
The display for entering your password appears.

2 Enter your 4-digit password using the number buttons, then press ENTER.
The player starts playback.

Hint
If you forget your password, remove the disc and repeat Steps 1 to 3 of "Locking Discs (PARENTAL CONTROL)." When you are asked to enter your password, enter "199703" using the number buttons, then press ENTER. The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password, replace the disc in the player and press ▷. When the display for entering your password appears, enter your new password.

Notes

- When you play discs which do not have the Parental Control function, playback cannot be limited on this player.
- Depending on the disc, you may be asked to change the parental control level while playing the disc. In this case, enter your password, then change the level. If the Resume Play mode is canceled, the level returns to the previous level.

Area Code

Standard	Code number
Argentina	2044
Australia	2047
Austria	2046
Belgium	2057
Brazil	2070
Canada	2079
Chile	2090
China	2092
Denmark	2115
Finland	2165
France	2174
Germany	2109
India	2248
Indonesia	2238
Italy	2254
Japan	2276
Korea	2304
Malaysia	2363
Mexico	2362
Netherlands	2376
New Zealand	2390
Norway	2379
Pakistan	2427
Philippines	2424
Portugal	2436
Russia	2489
Singapore	2501
Spain	2149
Sweden	2499
Switzerland	2086
Thailand	2528
United Kingdom	2184

Changing the password

1 Press DISPLAY while the player is in stop mode.
The Control Menu appears.

2 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.
The options for "PARENTAL CONTROL" appear.

3 Press ↑/↓ to select "PASSWORD →," then press ENTER.
The display for entering the password appears.

4 Enter your 4-digit password using the number buttons, then press ENTER.

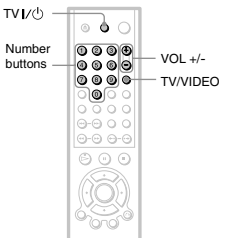
5 Enter a new 4-digit password using the number buttons, then press ENTER.

6 To confirm your password, re-enter it using the number buttons, then press ENTER.

If you make a mistake entering your password
Press ← before you press ENTER and input the correct number.

Controlling Your TV with the Supplied Remote

You can control the sound level, input source, and power switch of your Sony TV with the supplied remote.



You can control your TV using the buttons below.

By pressing	You can
TV I/⏻	Turn the TV on or off
VOL +/–	Adjust the volume of the TV
TV/VIDEO	Switch the TV's input source between the TV and other input sources.

Note
Depending on the unit being connected, you may not be able to control your TV using some of the buttons.

Controlling other TVs with the remote

You can control the sound level, input source, and power switch of non-Sony TVs as well. If your TV is listed in the table below, set the appropriate manufacturer's code.

1 While holding down TV I/⏻, press the number buttons to select your TV's manufacturer's code (see the table below).

2 Release TV I/⏻.

Code numbers of controllable TVs

Manufacturer	Code number
Sony	01 (default)
JVC	09
Panasonic	19
Philips	21
RCA	10
Samsung	20
Sanyo	11
Sharp	18
Toshiba	07
Zenith	15

Notes

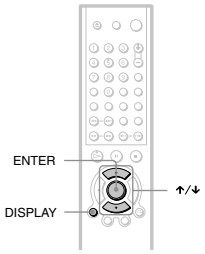
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the remote's batteries, the code number you have set may be reset to the default setting. Set the appropriate code number again.

Using the Setup Display

By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item, see pages from 54 to 58.

Note

Playback settings stored in the disc take priority over the Setup Display settings and not all of the functions described may work.

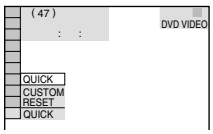


1 Press DISPLAY when the player is in stop mode.

The Control Menu appears.

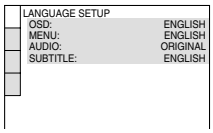
2 Press ↑/↓ to select (SETUP), then press ENTER.

The options for “SETUP” appear.



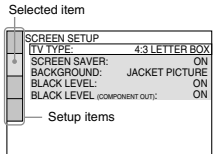
3 Press ↑/↓ to select “CUSTOM,” then press ENTER.

The Setup Display appears.



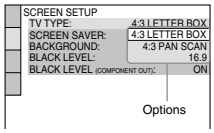
4 Press ↑/↓ to select the setup item from the displayed list: “LANGUAGE SETUP,” “SCREEN SETUP,” “CUSTOM SETUP,” or “AUDIO SETUP.” Then press ENTER.

The Setup item is selected.
Example: “SCREEN SETUP”



5 Select an item using ↑/↓, then press ENTER.

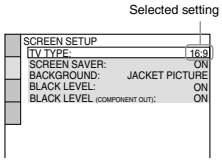
The options for the selected item appear.
Example: “TV TYPE”



➞continued

6 Select a setting using ↑/↓, then press ENTER.

The setting is selected and setup is complete.
Example: “16:9”



To enter the Quick Setup mode

Select “QUICK” in Step 3. Follow from Step 5 of the Quick Setup explanation to make basic adjustments (page 23).

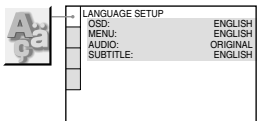
To reset all of the “SETUP” settings

1. Select “RESET” in Step 3 and press ENTER.
2. Select “YES” using ↑/↓.
   You can also quit the process and return to the Control Menu by selecting “NO” here.
3. Press ENTER.
   All of the settings explained on pages 54 to 58 return to the default settings. Do not press I/⏻ while resetting the player as it takes a few seconds to complete.

Setting the Display or Sound Track Language (LANGUAGE SETUP)

“LANGUAGE SETUP” allows you to set various languages for the on-screen display or sound track.

Select “LANGUAGE SETUP” in the Setup Display. To use the display, see “Using the Setup Display” (page 53).



◆ OSD (On-Screen Display)
Switches the display language on the screen.

◆ MENU (DVD only)
You can select the desired language for the disc’s menu.

◆ AUDIO (DVD only)
Switches the language of the sound track. When you select “ORIGINAL,” the language given priority in the disc is selected.

◆ SUBTITLE (DVD only)
Switches the language of the subtitle recorded on the DVD.
When you select “AUDIO FOLLOW,” the language for the subtitles changes according to the language you selected for the sound track.

Hint

If you select “OTHERS →” in “MENU,” “SUBTITLE,” and “AUDIO,” select and enter a language code from “Language Code List” on page 65 using the number buttons.

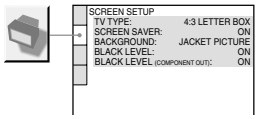
Note

When you select a language in “MENU,” “SUBTITLE,” or “AUDIO” that is not recorded on the DVD, one of the recorded languages will be automatically selected.

Settings for the Display (SCREEN SETUP)

Choose settings according to the TV to be connected.

Select “SCREEN SETUP” in the Setup Display. To use the display, see “Using the Setup Display” (page 53).
The default settings are underlined.

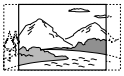


◆ TV TYPE
Selects the aspect ratio of the connected TV (4:3 standard or wide).

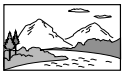
4:3 LETTER BOX	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 PAN SCAN	Select this when you connect a 4:3 screen TV. Automatically displays the wide picture on the entire screen and cuts off the portions that do not fit.
16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.

4:3 LETTER BOX

4:3 PAN SCAN



16:9



Note

Depending on the DVD, “4:3 LETTER BOX” may be selected automatically instead of “4:3 PAN SCAN” or vice versa.

◆ SCREEN SAVER
The screen saver image appears when you leave the player in pause or stop mode for 15 minutes, or when you play a CD or DATA CD (MP3 audio) for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press ▷ to turn off the screen saver.

ON	Turns on the screen saver.
OFF	Turns off the screen saver.

◆ BACKGROUND
Selects the background color or picture on the TV screen in stop mode or while playing a CD or DATA CD (MP3 audio).

JACKET PICTURE	The jacket picture (still picture) appears, but only when the jacket picture is already recorded on the disc (CD-EXTRA, etc.). If the disc does not contain a jacket picture, the “GRAPHICS” picture appears.
GRAPHICS	A preset picture stored in the player appears.
BLUE	The background color is blue.
BLACK	The background color is black.

◆ BLACK LEVEL
Selects the black level (setup level) for the video signals output from the jacks other than COMPONENT VIDEO OUT.

ON	Sets the black level of the output signal to the standard level.
OFF	Lowers the standard black level. Use this when the picture becomes too white.

➞continued

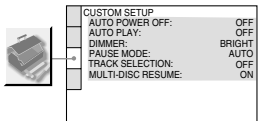
◆ BLACK LEVEL (COMPONENT OUT)
Selects the black level (setup level) for the video signals output from the COMPONENT VIDEO OUT jacks. You cannot select this when the player outputs progressive signal and the PROGRESSIVE indicator lights up on the front panel.

ON	Sets the black level of the output signal to the standard level.
OFF	Lowers the standard black level. Use this when the picture becomes too white.

Custom Settings (CUSTOM SETUP)

Use this to set up playback related and other settings.

Select “CUSTOM SETUP” in the Setup Display. To use the display, see “Using the Setup Display” (page 53).
The default settings are underlined.



◆ AUTO POWER OFF
Switches the Auto Power Off setting on or off.

OFF	Switches this function off.
ON	The player enters standby mode when left in stop mode for more than 30 minutes.

◆ AUTO PLAY
Switches the Auto Play setting on or off. This function is useful when the player is connected to a timer (not supplied).

OFF	Switches this function off.
ON	Automatically starts playback when the player is turned on.

◆ DIMMER
Adjusts the lighting of the front panel display.

BRIGHT	Makes the lighting bright.
DARK	Makes the lighting dark.

◆ PAUSE MODE (DVD only)

Selects the picture in pause mode.

AUTO	The picture, including subjects that move dynamically, is output with no jitter. Normally select this position.
FRAME	The picture, including subjects that do not move dynamically, is output in high resolution.

◆ TRACK SELECTION (DVD only)

Gives the sound track which contains the highest number of channels priority when you play a DVD on which multiple audio formats (PCM, DTS, or Dolby Digital format) are recorded.

OFF	No priority given.
AUTO	Priority given.

Notes

- When you set the item to "AUTO," the language may change. The "TRACK SELECTION" setting has higher priority than the "AUDIO" settings in "LANGUAGE SETUP" (page 54).
- If you set "DTS" to "OFF" (page 58), the DTS sound track is not played even if you set "TRACK SELECTION" to "AUTO."
- If PCM, DTS, and Dolby Digital sound tracks have the same number of channels, the player selects PCM, DTS, and Dolby Digital sound tracks in this order.

◆ MULTI-DISC RESUME (DVD/VIDEO CD only)

Switches the Multi-disc Resume setting on or off. Resume playback point can be stored in memory for up to 6 different DVD/VIDEO CD discs (page 27).

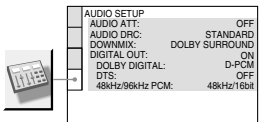
ON	Stores the resume settings in memory for up to six discs.
OFF	Does not store the resume settings in memory. Playback restarts at the resume point only for the current disc in the player.

Settings for the Sound

(AUDIO SETUP)

"AUDIO SETUP" allows you to set the sound according to the playback and connection conditions.

Select "AUDIO SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 53).
The default settings are underlined.



◆ AUDIO ATT (attenuation)

If the playback sound is distorted, set this item to "ON." The player reduces the audio output level.
This function affects the output of the LINE OUT L/R (AUDIO) jacks.

OFF	Normally, select this position.
ON	Select this when the playback sound from the speakers is distorted.

◆ AUDIO DRC (Dynamic Range Control) (DVD only)

Makes the sound clear when the volume is turned down when playing a DVD that conforms to "AUDIO DRC." This affects the output from the following jacks:
– LINE OUT L/R (AUDIO) jacks
– DIGITAL OUT (COAXIAL) jack only when "DOLBY DIGITAL" is set to "D-PCM" (page 58).

STANDARD	Normally select this position.
TV MODE	Makes the low sounds clear even if you turn the volume down.
WIDE RANGE	Gives you the feeling of being at a live performance.

➡continued

◆ DOWNMIX (DVD only)

Switches the method for mixing down to 2 channels when you play a DVD which has rear sound elements (channels) or is recorded in Dolby Digital format. For details on the rear signal components, see "Checking the audio signal format" (page 44). This function affects the output of the following jacks:
– LINE OUT L/R (AUDIO) jacks
– DIGITAL OUT (COAXIAL) jack when "DOLBY DIGITAL" is set to "D-PCM" (page 58).

DOLBY SURROUND	Normally, select this position. Multi-channel audio signals are output to two channels for enjoying surround sounds
NORMAL	Multi-channel audio signals are downmixed to two channels for use with your stereo.

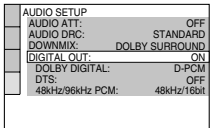
◆ DIGITAL OUT

Selects if audio signals are output via the DIGITAL OUT (COAXIAL) jack.

ON	Normally select this position. When you select "ON," see "Setting the digital output signal" for further settings.
OFF	The influence of the digital circuit upon the analog circuit is minimal.

Setting the digital output signal

Switches the method of outputting audio signals when you connect a component such as an amplifier (receiver) or MD deck with a digital input jack.
For connection details, see page 18.
Select "DOLBY DIGITAL" and "DTS" after setting "DIGITAL OUT" to "ON."



If you connect a component that does not conform to the selected audio signal, a loud noise (or no sound) will come out from the speakers, damaging your ears or speakers.

◆ DOLBY DIGITAL (DVD only)

Selects the type of Dolby Digital signal.

D-PCM	Select this when the player is connected to an audio component without a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the "DOWNMIX" item in "AUDIO SETUP" (page 58).
DOLBY DIGITAL	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.

◆ DTS

Selects whether or not to output DTS signals.

OFF	Select this when the player is connected to an audio component without a built-in DTS decoder.
ON	Select this when the player is connected to an audio component with a built-in DTS decoder.

◆ 48kHz/96kHz PCM (DVD only)

Selects the sampling frequency of the audio signal.

48kHz/16bit	The audio signals of DVD VIDEOs are always converted to 48kHz/16bit.
96kHz/24bit	All types of signals including 96kHz/24bit are output in their original format. However, if the signal is encrypted for copyright protection purposes, the signal is only output as 48kHz/16bit.

Note

The analog audio signals from the LINE OUT L/R (AUDIO) jacks are not affected by this setting and keep their original sampling frequency level.

Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs.
Should any problem persist, consult your nearest Sony dealer.

Power

The power is not turned on.

➡ Check that the AC power cord is connected securely.

Picture

There is no picture/picture noise appears.

➡ Re-connect the connecting cord securely.
➡ The connecting cords are damaged.
➡ Check the connection to your TV (page 15) and switch the input selector on your TV so that the signal from the player appears on the TV screen.
➡ The disc is dirty or flawed.
➡ If the picture output from your player goes through your VCR to get to your TV or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programs could affect picture quality. If you still experience problems even when you connect your player directly to your TV, please try connecting your player to your TV's S VIDEO input (page 15).
➡ You pressed the PROGRESSIVE button on the front panel (the PROGRESSIVE indicator lights up) even though your TV cannot accept the progressive signal. In this case, press the PROGRESSIVE button on the front panel so that the PROGRESSIVE indicator turns off.
➡ You pressed the PROGRESSIVE button on the front panel (the PROGRESSIVE indicator lights up) but did not connect your TV to the player's COMPONENT VIDEO OUT jacks using a COMPONENT VIDEO cord. Press the PROGRESSIVE button only when you connect your TV to the player's COMPONENT VIDEO OUT jacks using a component video cord (page 17).
➡ Even if your TV is compatible with progressive format (480p) signals, the image may be affected when you set the player to progressive format. In this case, press the PROGRESSIVE button so that the PROGRESSIVE indicator turns off and the player is set to normal (interlace) format.

Even though you set the aspect ratio in "TV TYPE" of "SCREEN SETUP," the picture does not fill the screen.

➡ The aspect ratio of the disc is fixed on your DVD.

Sound

There is no sound.

➡ Re-connect the connecting cord securely.
➡ The connecting cord is damaged.
➡ The player is connected to the wrong input jack on the amplifier (receiver) (page 20, 21, 22).
➡ The amplifier (receiver) input is not correctly set.
➡ The player is in pause mode or in Slow-motion Play mode.
➡ The player is in fast forward or fast reverse mode.
➡ If the audio signal does not come through the DIGITAL OUT (COAXIAL) jack, check the audio settings (page 58).
➡ While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "2:STEREO," "2:1/L," or "2:2/R."

Sound distortion occurs.

➡ Set "AUDIO ATT" in "AUDIO SETUP" to "ON" (page 57).

The sound volume is low.

➡ The sound volume is low on some DVDs. The sound volume may improve if you set "AUDIO DRC" to "TV MODE" (page 57).
➡ Set "AUDIO ATT" in "AUDIO SETUP" to "OFF" (page 57).

➡continued

Operation

The remote does not function.

➡ There are obstacles between the remote and the player.
➡ The distance between the remote and the player is too far.
➡ The remote is not pointed at the remote sensor on the player.
➡ The batteries in the remote are weak.

The disc does not play.

➡ The disc is turned over. Insert the disc with the playback side facing down on the disc tray.
➡ The disc is skewed.
➡ The player cannot play certain discs (page 6).
➡ The region code on the DVD does not match the player.
➡ Moisture has condensed inside the player (page 3).
➡ The player cannot play a recorded disc that is not correctly finalized (page 6).

The MP3 audio track cannot be played (page 30).

➡ The DATA CD is not recorded in an MP3 format that conforms to ISO9660 Level 1/Level 2 or Joliet.
➡ The MP3 audio track does not have the extension ".MP3."
➡ The data is not formatted in MP3 even though it has the extension ".MP3."
➡ The data is not MPEG1 Audio Layer 3 data.
➡ The player cannot play audio tracks in MP3PRO format.

The title of the MP3 audio album or track is not correctly displayed.

➡ The player can only display numbers and alphabet. Other characters are displayed as "*."

The disc does not start playing from the beginning.

➡ Program Play, Shuffle Play, Repeat Play, or A-B Repeat Play has been selected (page 31).
➡ Resume play has taken effect (page 27).

The player starts playing the disc automatically.

➡ The disc features an auto playback function.
➡ "AUTO PLAY" in "CUSTOM SETUP" is set to "ON" (page 56).

Playback stops automatically.

➡ While playing discs with an auto pause signal, the player stops playback at the auto pause signal.

You cannot perform some functions such as Stop, Search, Slow-motion Play, Repeat Play, Shuffle Play, or Program Play.

➡ Depending on the disc, you may not be able to do some of the operations above. See the operating manual that comes with the disc.

The language for the sound track cannot be changed.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 28).
➡ Multilingual tracks are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the language for the sound track.

The subtitle language cannot be changed or turned off.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 28).
➡ Multilingual subtitles are not recorded on the DVD being played.
➡ The DVD prohibits the changing of subtitles.

The angles cannot be changed.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 28).
➡ Multi-angles are not recorded on the DVD being played.
➡ The angle can only be changed when the "" indicator lights up on the front panel display (page 9).
➡ The DVD prohibits changing of the angles.

The player does not operate properly.

➡ When static electricity, etc., causes the player to operate abnormally, unplug the player.

5 numbers or letters are displayed on the screen and on the front panel display.

➡ The self-diagnosis function was activated. (See the table on page 61.)

The disc tray does not open and "LOCKED" appears on the front panel display.

➡ Child Lock is set (page 26).

The disc tray does not open and "TRAY LOCKED" appears on the front panel display.

➡ Contact your Sony dealer or local authorized Sony service facility.

"Data error" appears on the TV screen when playing a DATA CD.

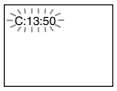
➡ The MP3 audio track you want to play is broken.

➡ The data is not MPEG1 Audio Layer 3 data.

Self-diagnosis Function

(When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the player from malfunctioning, a five-character service number (e.g., C 13 50) with a combination of a letter and four digits appears on the screen and the front panel display. In this case, check the following table.



First three characters of the service number	Cause and/or corrective action
C 13	The disc is dirty. ➡ Clean the disc with a soft cloth (page 7).
C 31	The disc is not inserted correctly. ➡ Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the player has performed the self-diagnosis function. ➡ Contact your nearest Sony dealer or local authorized Sony service facility and give the 5-character service number. Example: E 61 10

Glossary

Chapter (page 9)
Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

Dolby Digital (page 22, 58)
Digital audio compression technology developed by Dolby Laboratories. This technology conforms to multi-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same discrete channels of high quality digital audio found in "Dolby Digital" theater surround sound systems. Good channel separation is realized because all of the channel data are recorded discretely and little deterioration is realized because all channel data processing is digital.

Dolby Surround (Pro Logic) (page 21)
Audio signal processing technology that Dolby Laboratories developed for surround sound. When the input signal contains a surround component, the Pro Logic process outputs the front, center and rear signals. The rear channel is monaural.

DTS (page 22, 58)
Digital audio compression technology that Digital Theater Systems, Inc. developed. This technology conforms to multi-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same discrete channels of high quality digital audio.
Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

DVD (page 6)
A disc that contains up to 8 hours of moving pictures even though its diameter is the same as a CD.
The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5 GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17GB.
The picture data uses the MPEG 2 format, one of the worldwide standards of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in a multi-channel format, such as Dolby Digital, allowing you to enjoy a more real audio presence.
Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided with the DVD.

DVD-RW (page 6)
A DVD-RW is a recordable and rewritable disc that is the same size as a DVD VIDEO. The DVD-RW has two different modes: VR mode and Video mode. DVD-RWs created in Video mode have the same format as a DVD VIDEO, while discs created in VR (Video Recording) mode allow the contents to be programmed or edited.

DVD+RW (page 6)
A DVD+RW (plus RW) is a recordable and rewritable disc. DVD+RWs use a recording format that is comparable to the DVD VIDEO format.

Index (CD)/Video Index (VIDEO CD) (page 12)
A number that divides a track into sections to easily locate the point you want on a CD or VIDEO CD. Depending on the disc, no index may be recorded.

Interlace format (page 17)
Interlace format shows every other line of an image as a single "field" and is the standard method for displaying images on television. The even number field shows the even numbered lines of an image, and the odd numbered field shows the odd numbered lines of an image.

Progressive format (page 17)
Compared to the Interlace format that alternately shows every other line of an image (field) to create one frame, the Progressive format shows the entire image at once as a single frame. This means that while the Interlace format can show 30 frames/60 fields in one second, the Progressive format can show 60 frames in one second. The overall picture quality increases and still images, text, and horizontal lines appear sharper. This player is compatible with the 480 progressive format.

Scene (page 9)
On a VIDEO CD with PBC (playback control) functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes."

Title (page 9)
The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

Track (page 9)
Sections of a picture or a music feature on a CD or VIDEO CD (the length of a song).

Specifications

System
Laser: Semiconductor laser
Signal format system: NTSC

Audio characteristics
Frequency response: DVD VIDEO (PCM 96 kHz): 2 Hz to 44 kHz (±1.0 dB)/DVD VIDEO (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB)/CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio): 115 dB
Harmonic distortion: 0.003 %
Dynamic range: DVD VIDEO: 103 dB/CD: 99 dB
Wow and flutter: Less than detected value (±0.001% W PEAK)

Outputs
(**Jack name:** Jack type/Output level/Load impedance)
LINE OUT (AUDIO): Phono jack/2 Vrms/10 kilohms
DIGITAL OUT (COAXIAL): Phono jack/0.5 Vp-p/75 ohms
COMPONENT VIDEO OUT(Y, P_B, P_R): Phono jack/Y: 1.0 Vp-p/P_B, P_R: 0.65 Vp-p/75 ohms
LINE OUT (VIDEO): Phono jack/1.0 Vp-p/75 ohms
S VIDEO OUT: 4-pin mini DIN/Y: 1.0 Vp-p, C: 0.286 Vp-p/75 ohms

General
Power requirements: 120 V AC, 60 Hz
Power consumption: 12 W
Dimensions (approx.): 430× 55.5× 244 mm (17× 2 3/16× 9 1/2 in.) (width/height/depth) incl. projecting parts
Mass (approx.): 2.15 kg (4 3/4 lb)
Operating temperature: 5 °C to 35 °C (41 °F to 95 °F)
Operating humidity: 25 % to 80 %

Supplied accessories
See page 14.

Specifications and design are subject to change without notice.

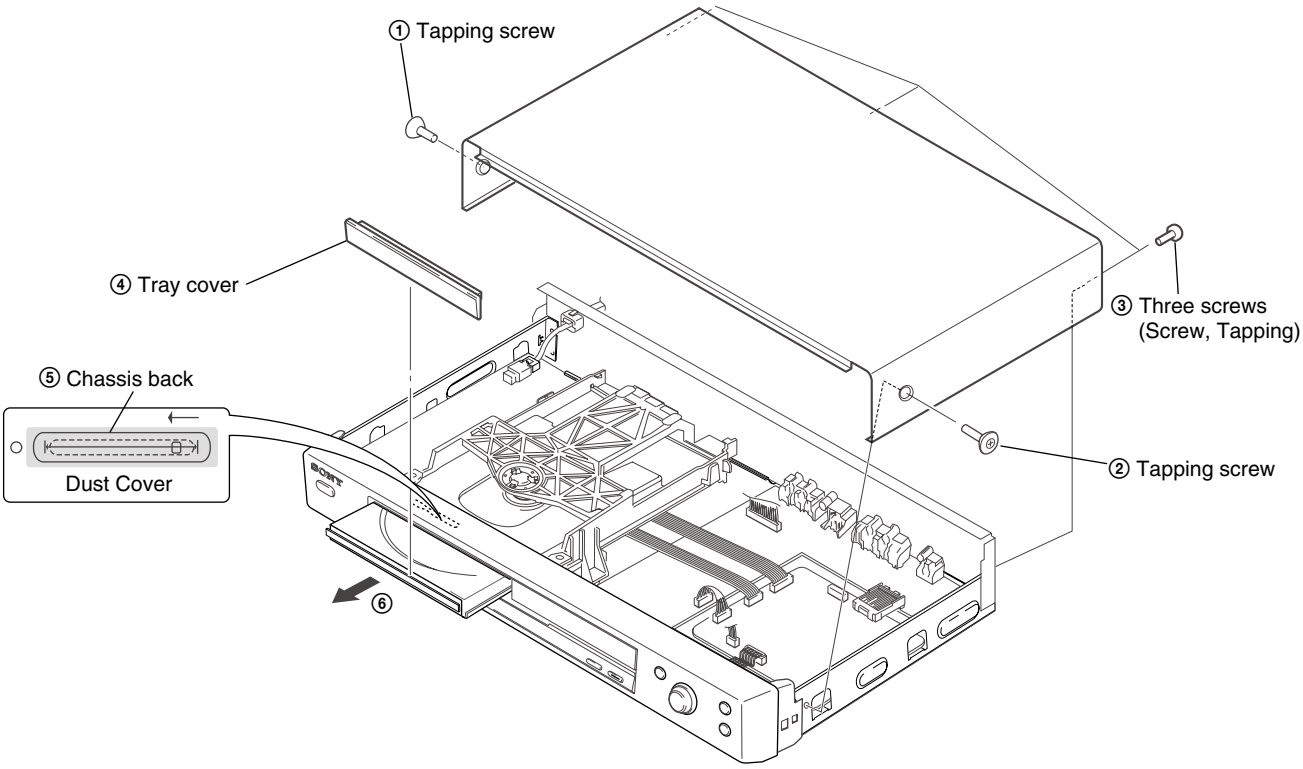
ENERGY STAR® is a U.S. registered mark. As an ENERGY STAR® Partner, Sony Corporation has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

MEMO

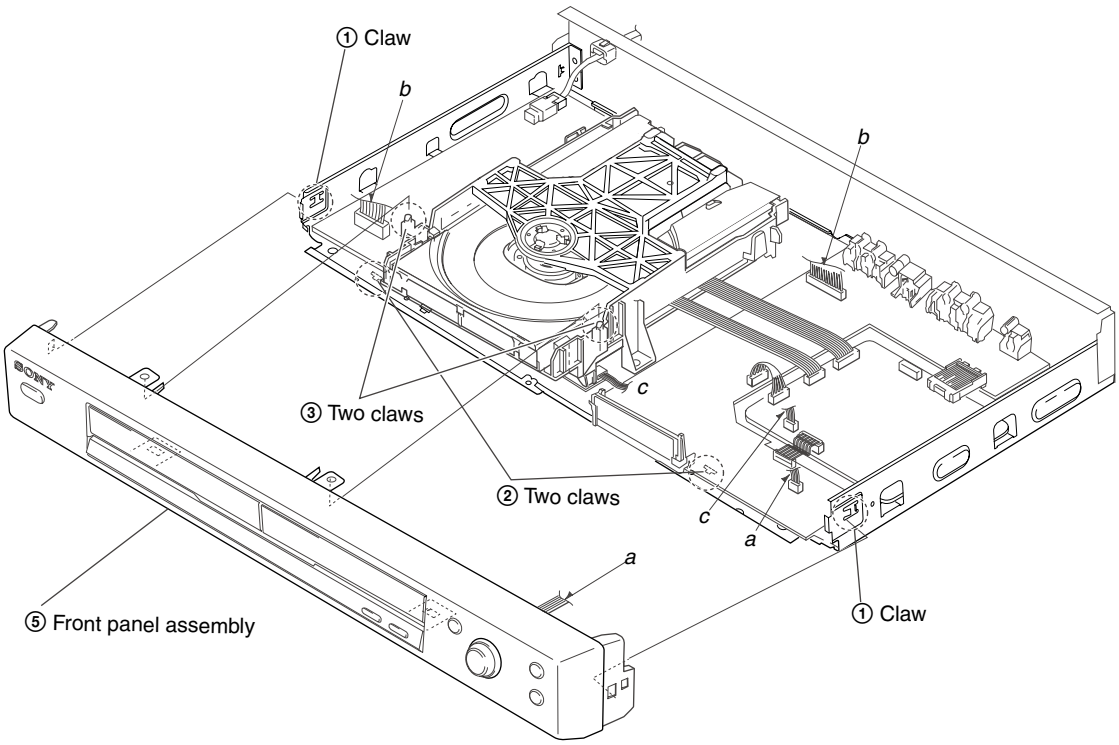
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

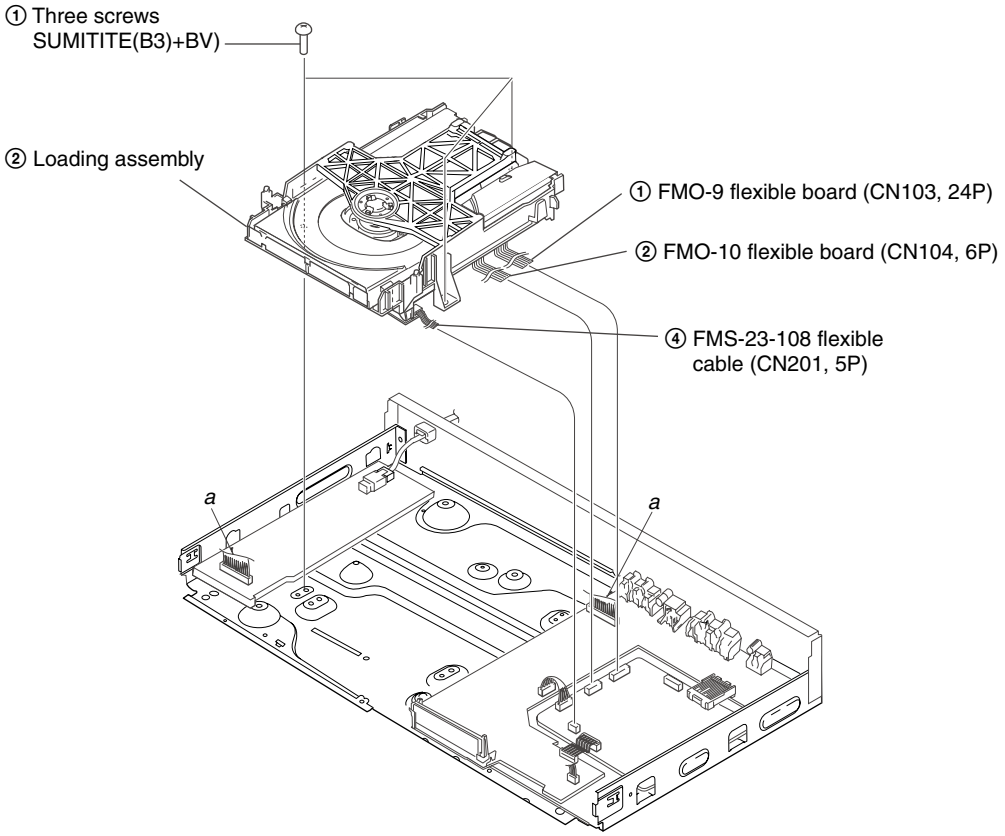
2-1. UPPER CASE



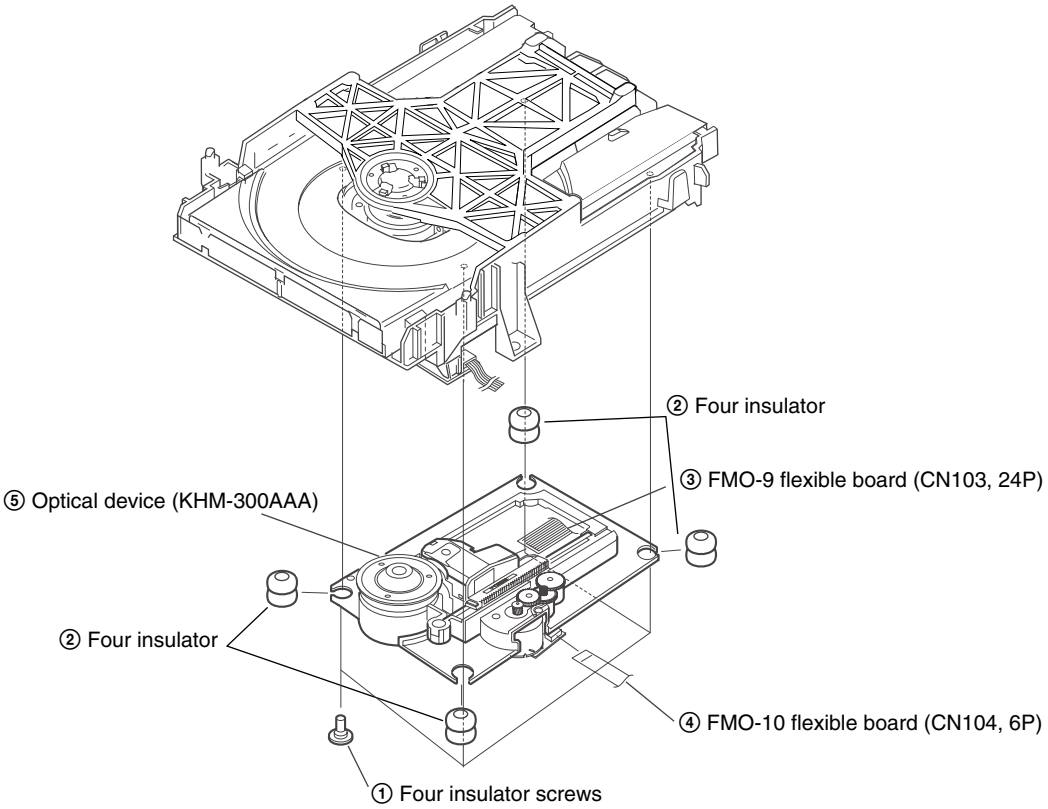
2-2. FRONT PANEL ASSEMBLY



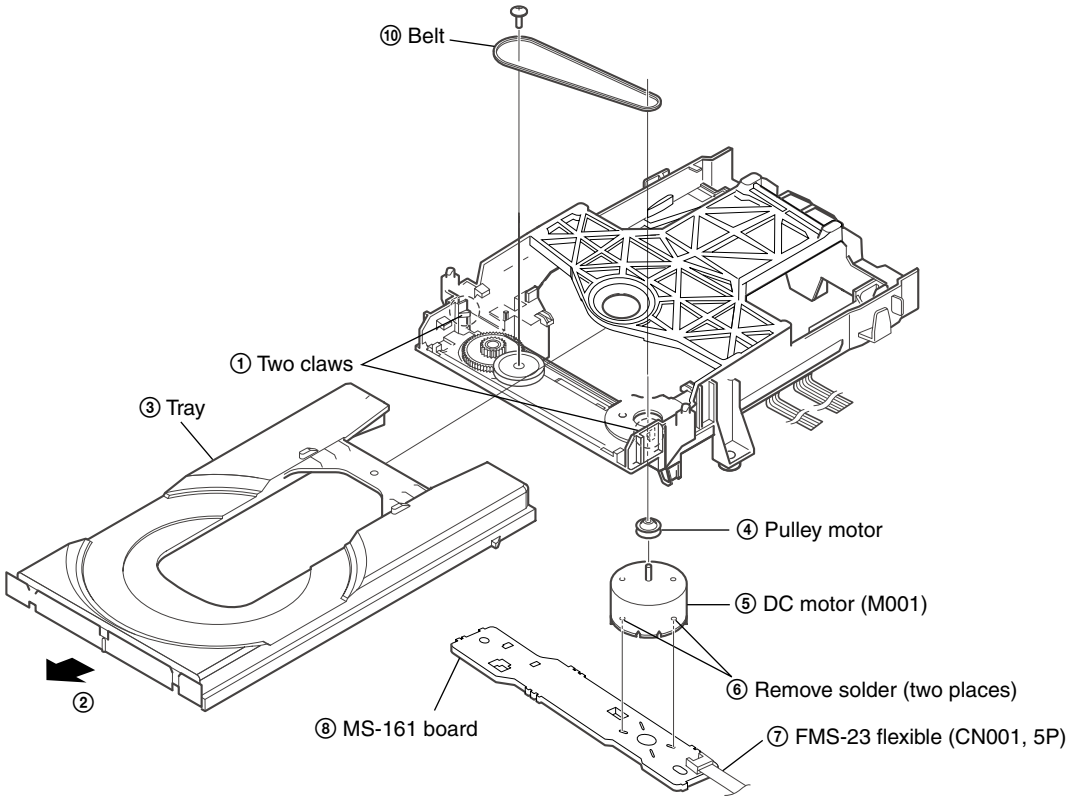
2-3. LOADING ASSEMBLY



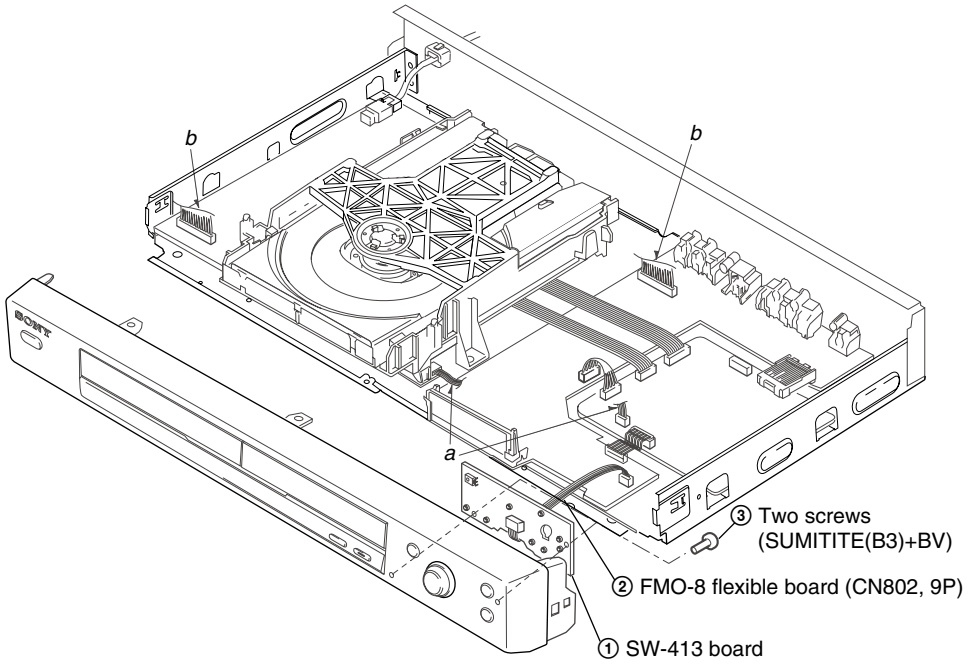
2-4. OPTICAL DEVICE (KHM-300AAA)


② Four insulator
③ FMO-9 flexible board (CN103, 24P)
⑤ Optical device (KHM-300AAA)
② Four insulator
④ FMO-10 flexible board (CN104, 6P)
① Four insulator screws

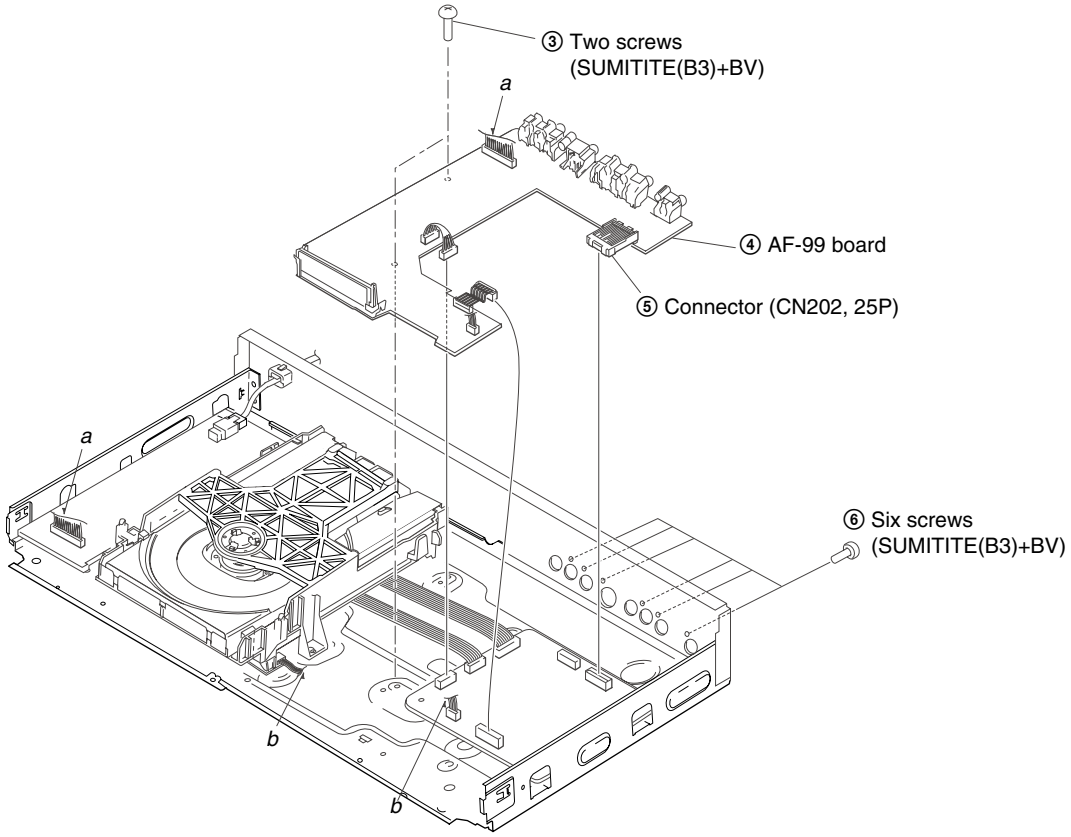
2-5. DC MOTOR and MS-161 BOARD



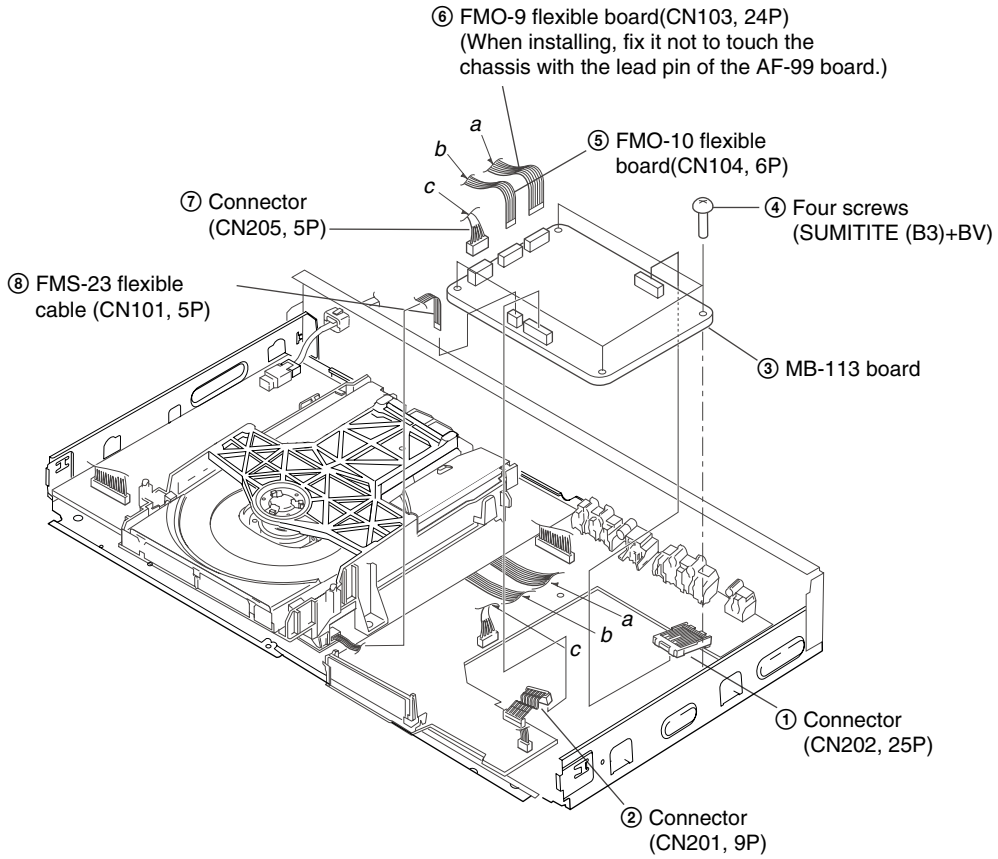
2-6. SW-413 BOARD



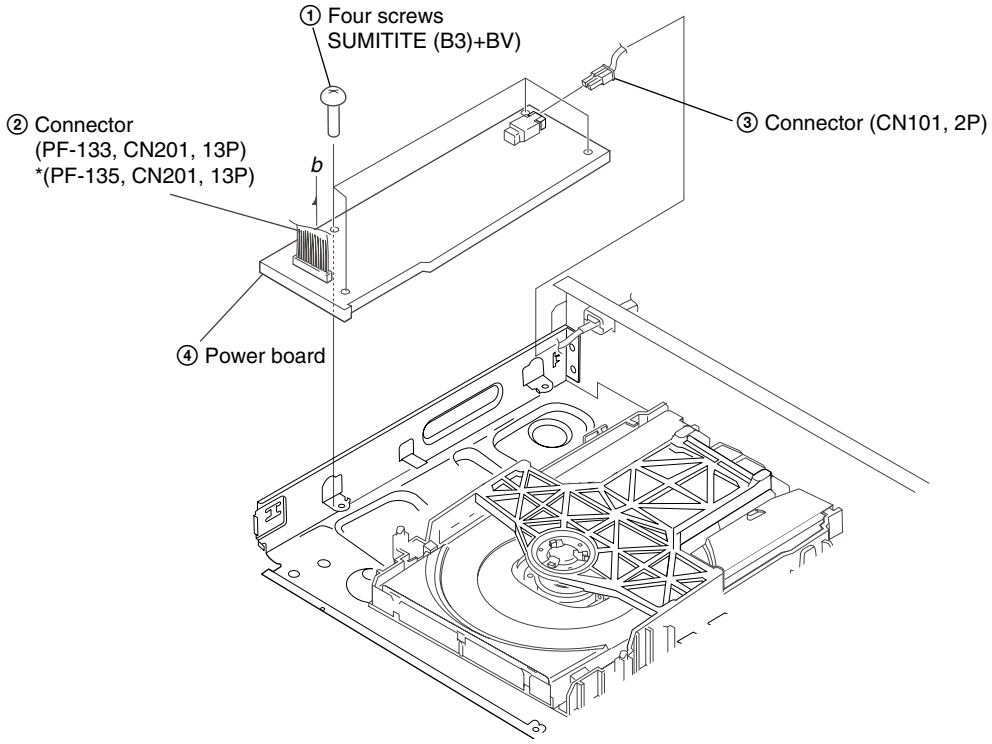
2-7. AF-099 BOARD



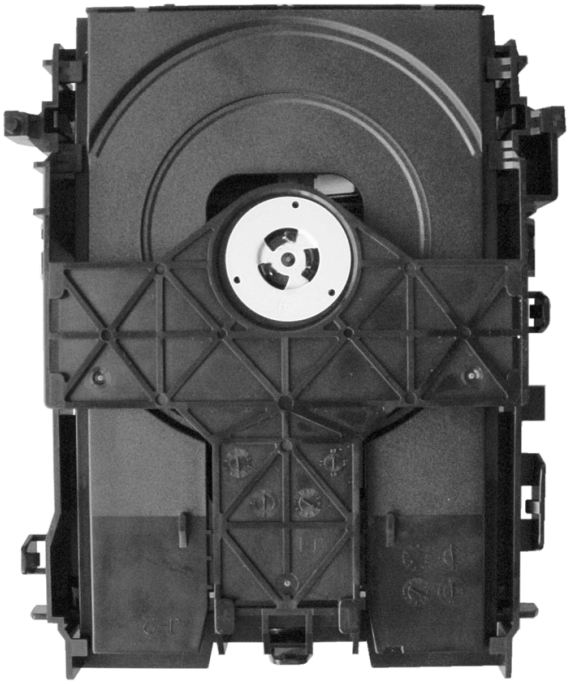
2-8. MB-113 BOARD



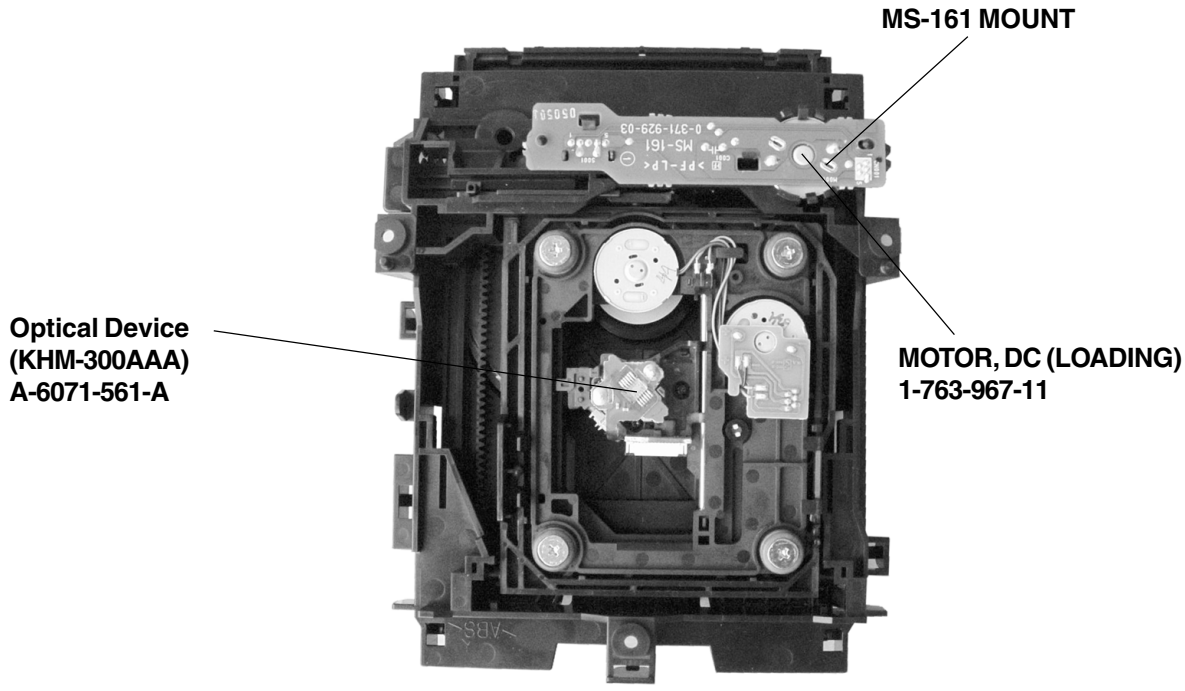
2-9. SWITCHING REGULATOR



2-10. INTERNAL VIEWS

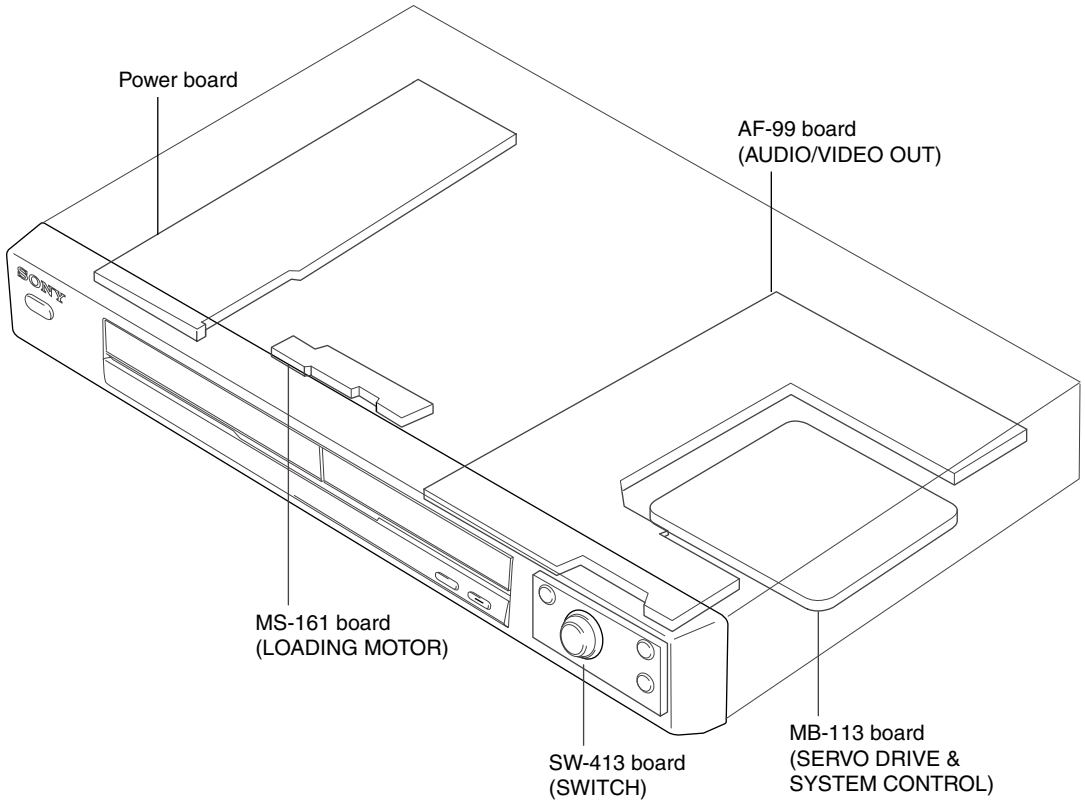


TOP VIEW



BOTTOM VIEW

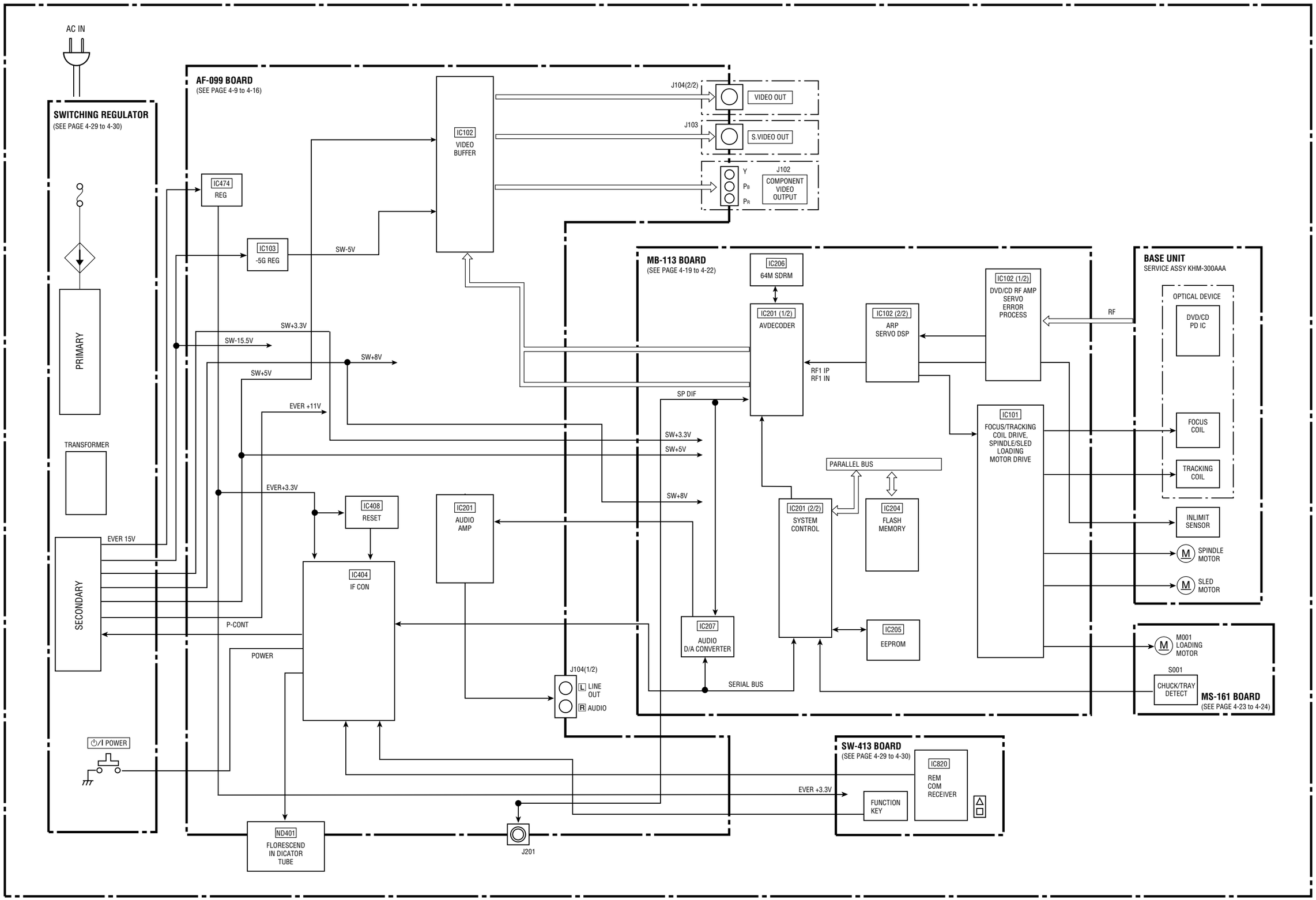
2-11. CIRCUIT BOARDS LOCATION



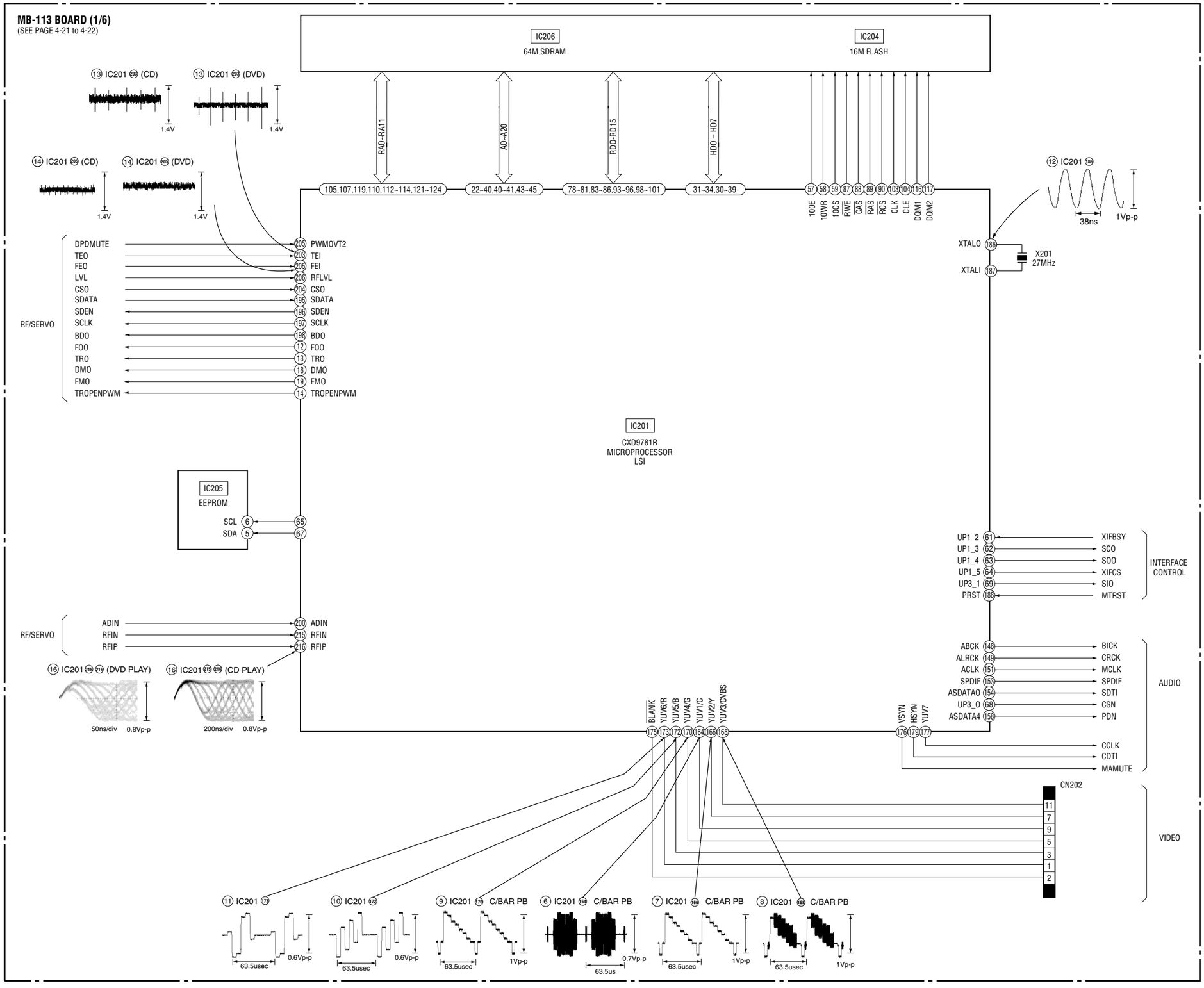
MEMO

SECTION 3
BLOCK DIAGRAMS

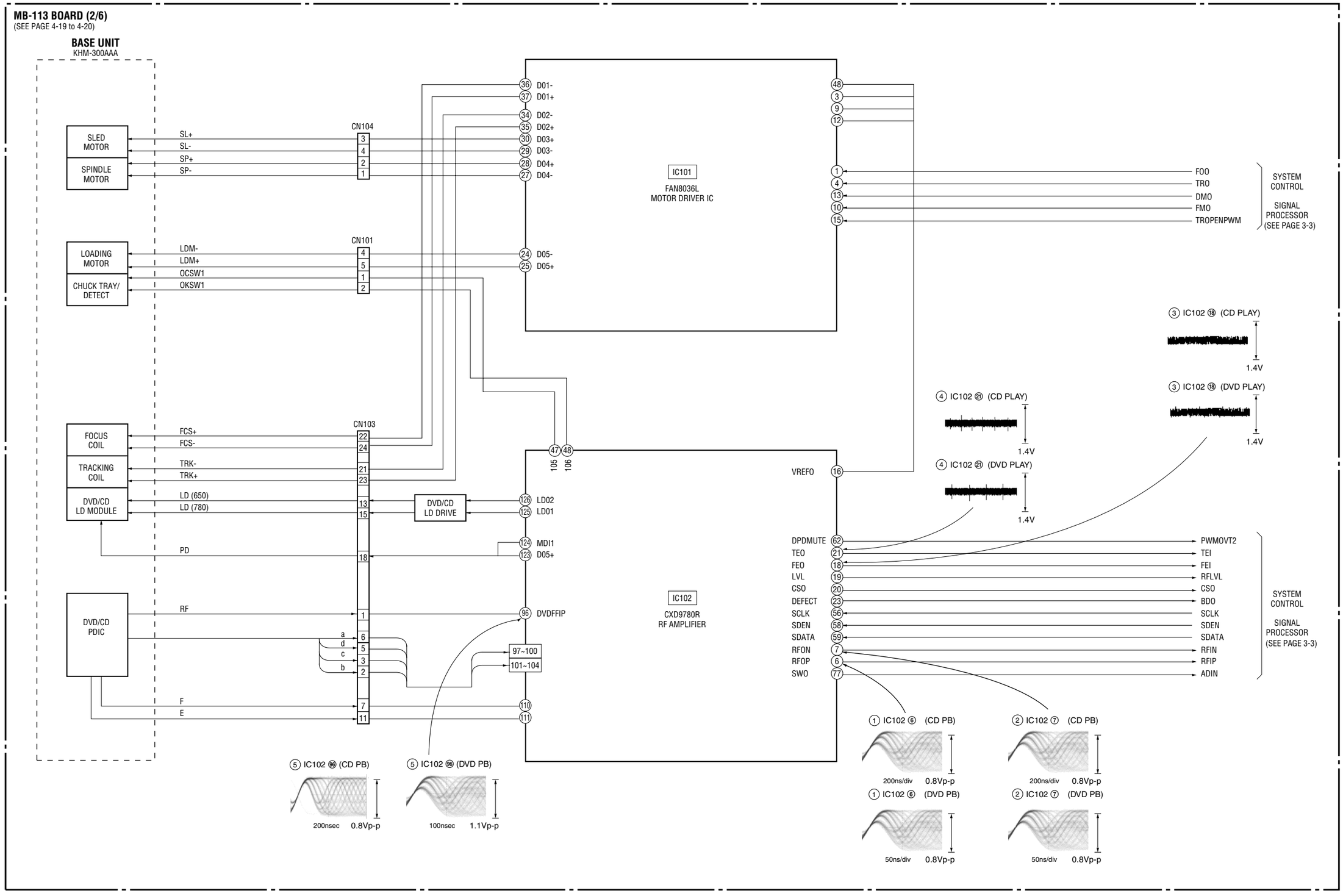
3-1. OVERALL BLOCK DIAGRAM



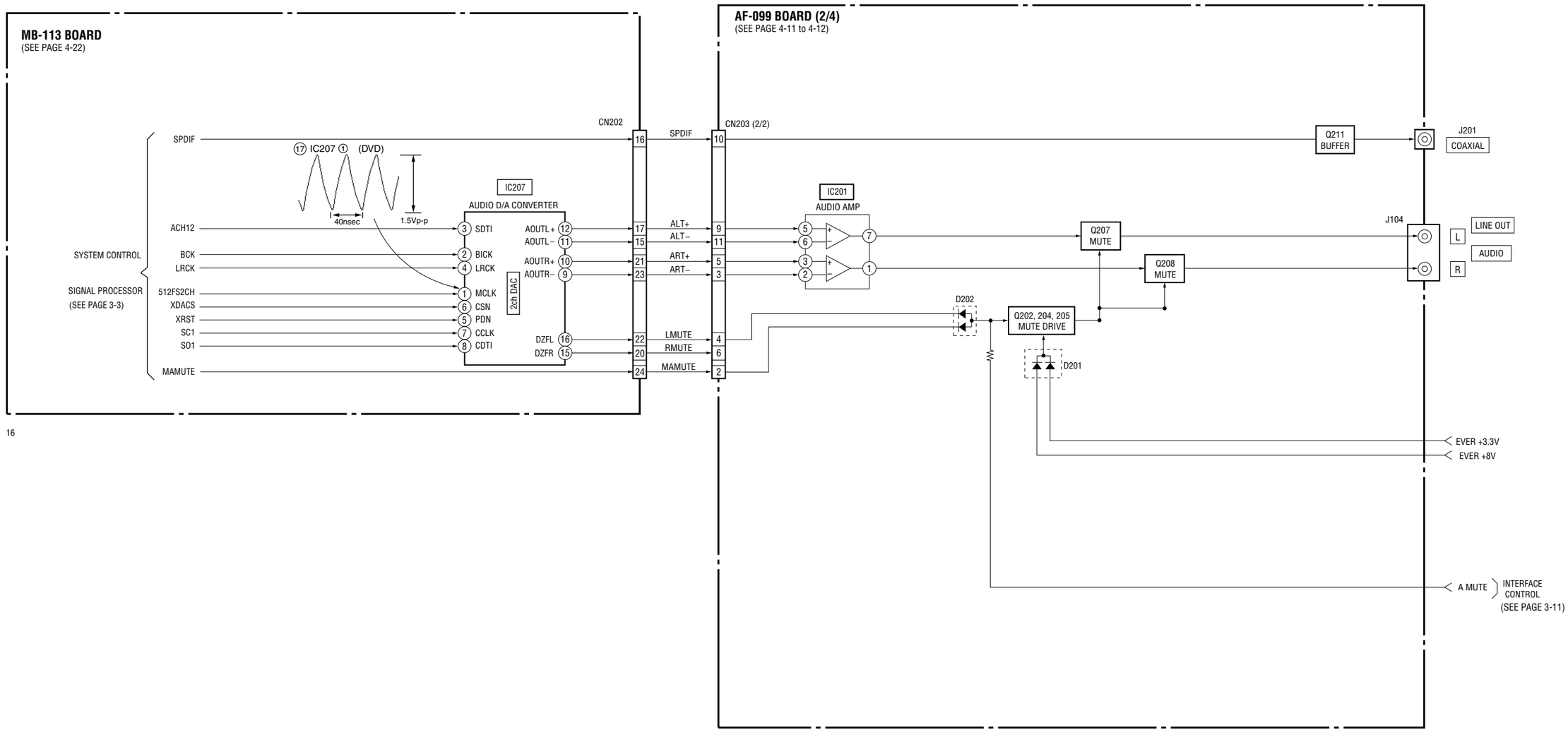
3-2. SYSTEM CONTROL/SIGNAL PROCESSOR BLOCK DIAGRAM



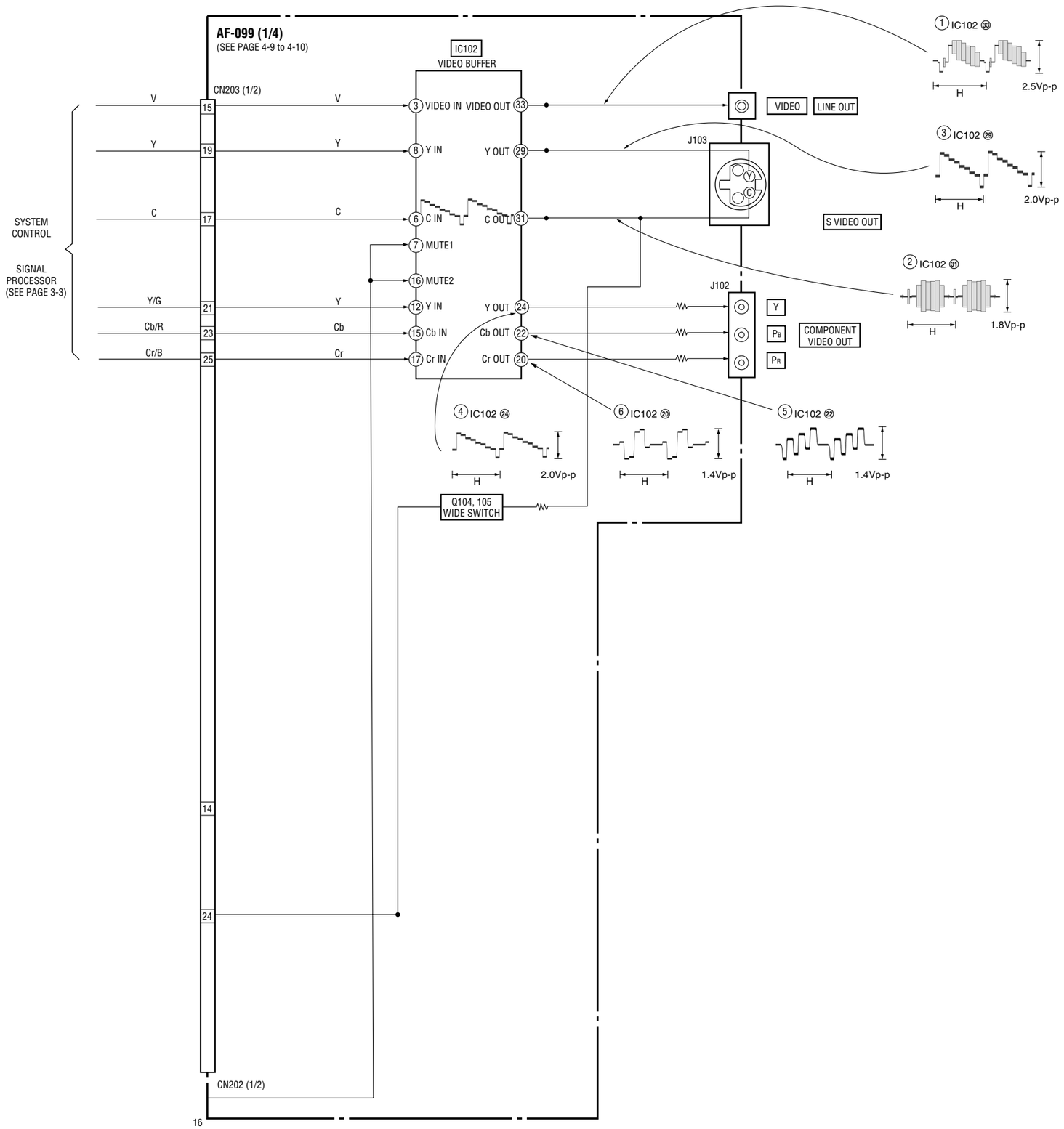
3-3. RF/SERVO BLOCK DIAGRAM



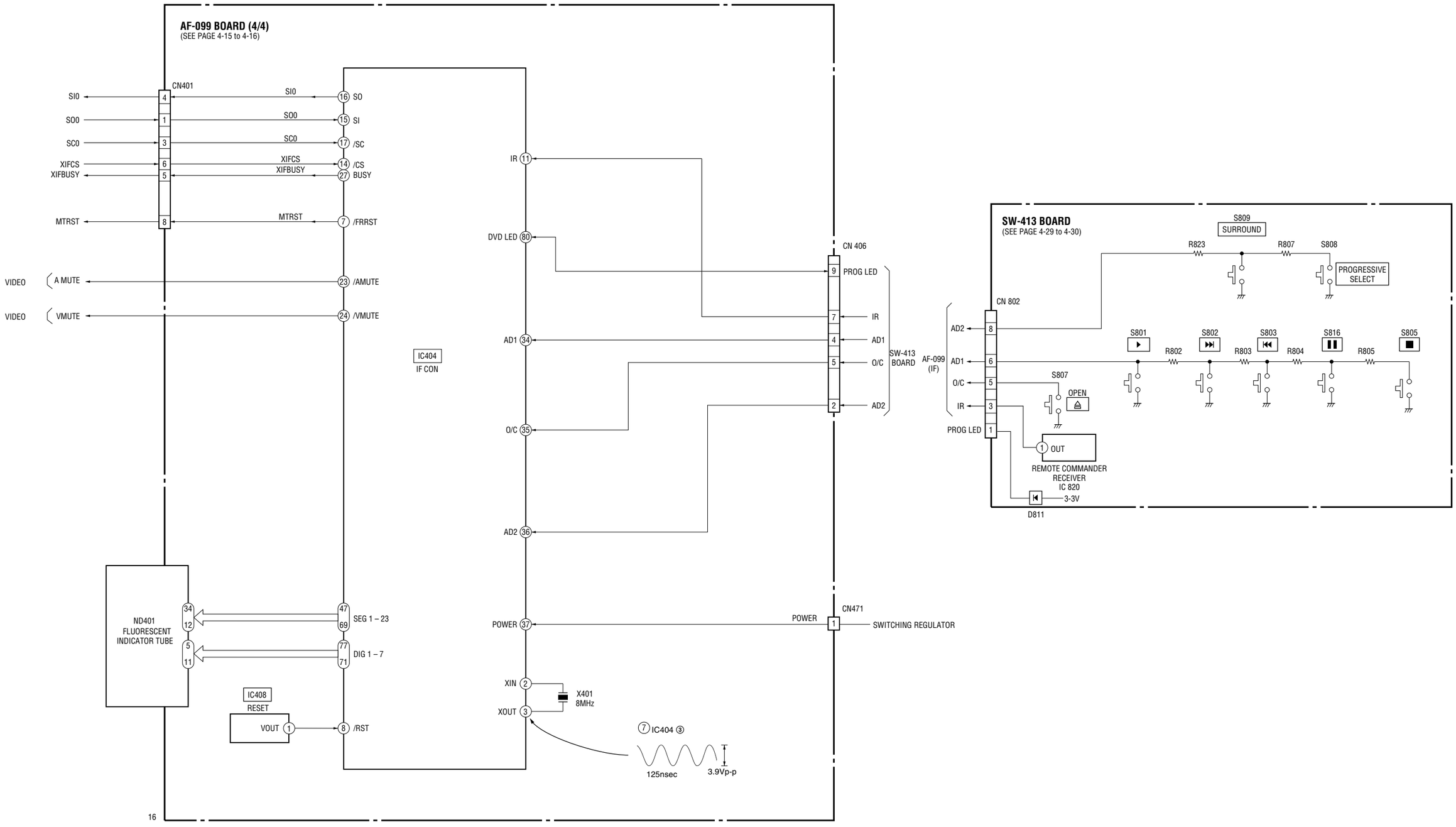
3-4. AUDIO BLOCK DIAGRAM



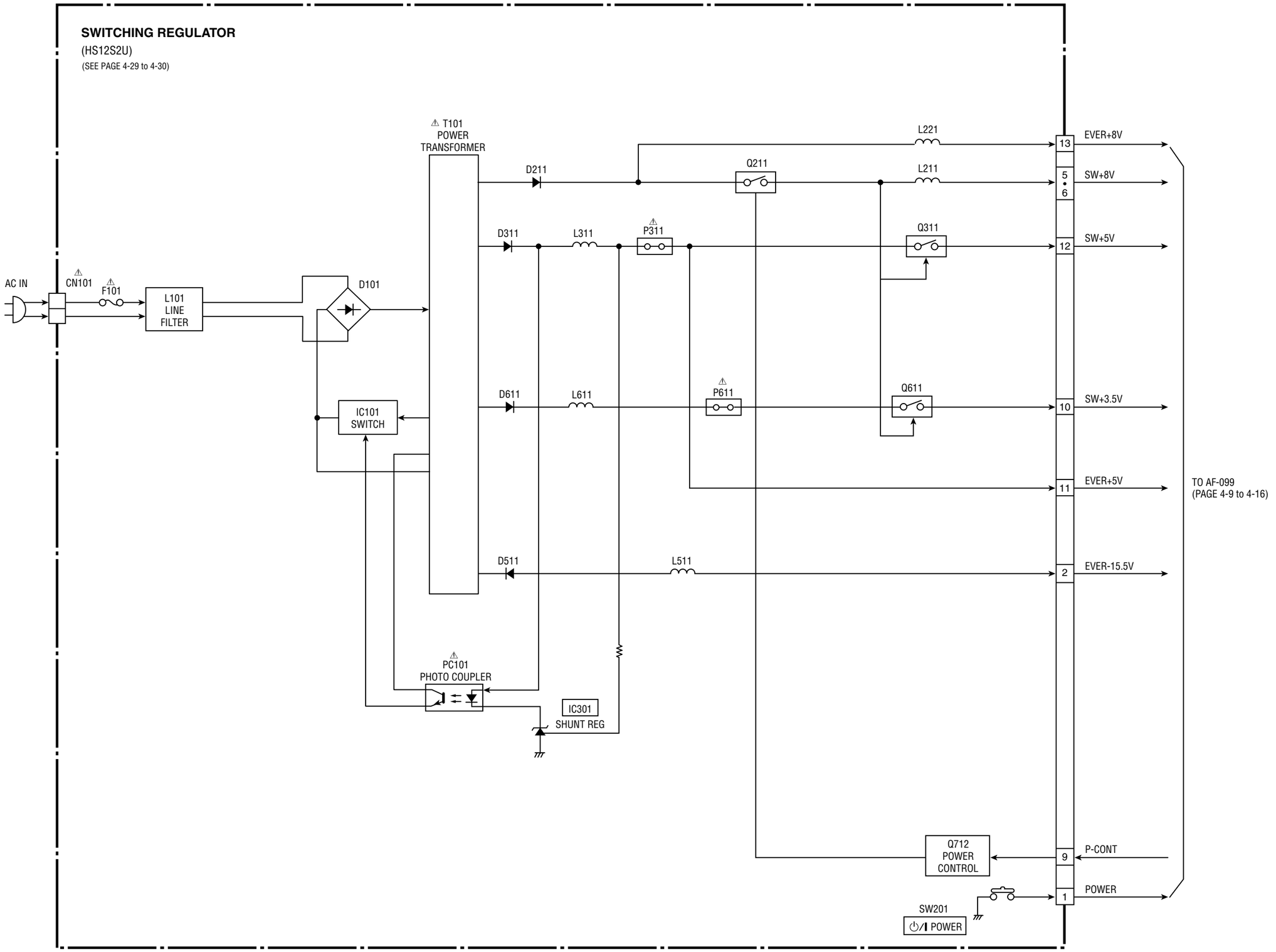
3-5. VIDEO BLOCK DIAGRAM



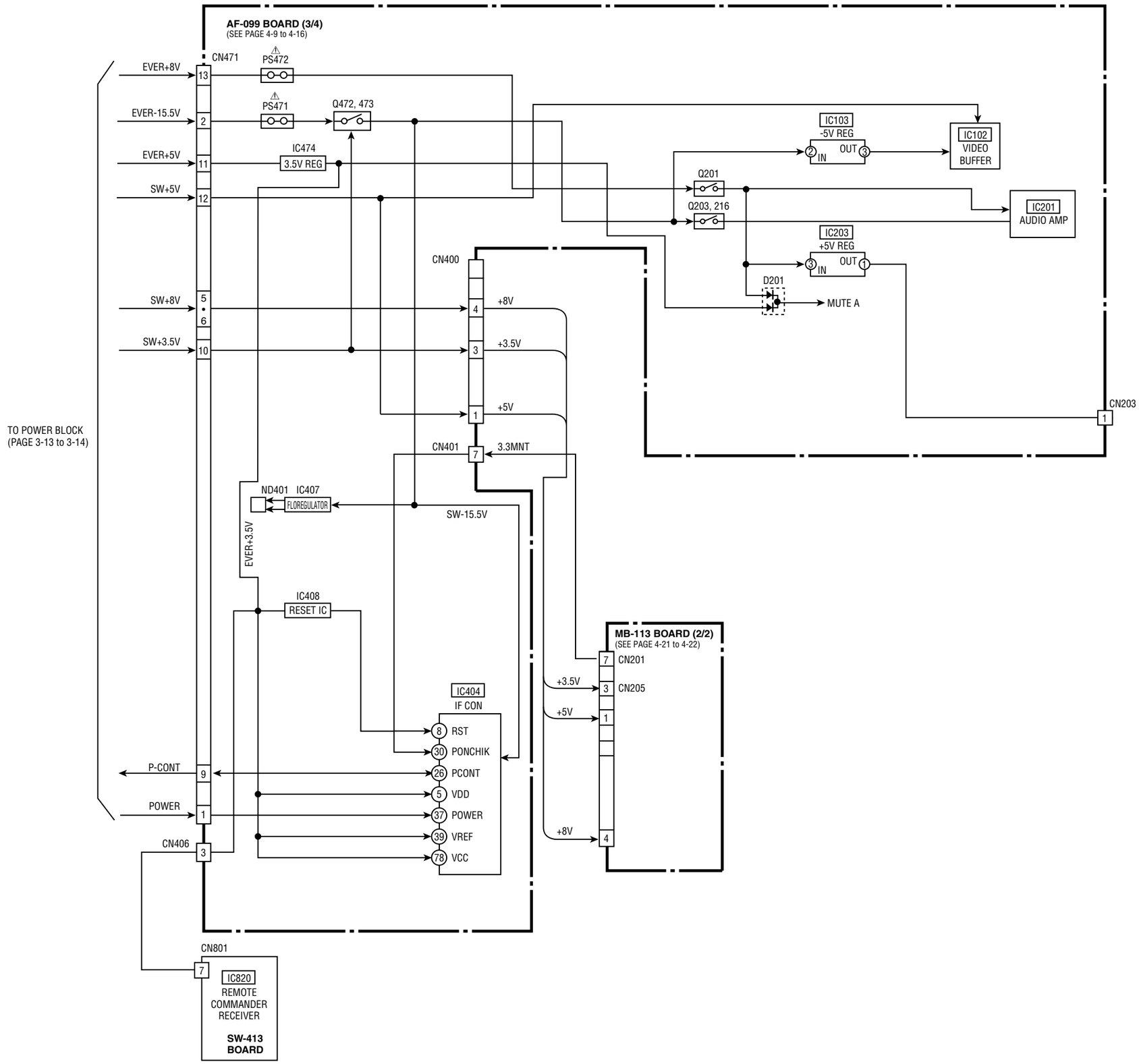
3-6. INTERFACE CONTROL BLOCK DIAGRAM



3-7. POWER BLOCK DIAGRAM (1/2)

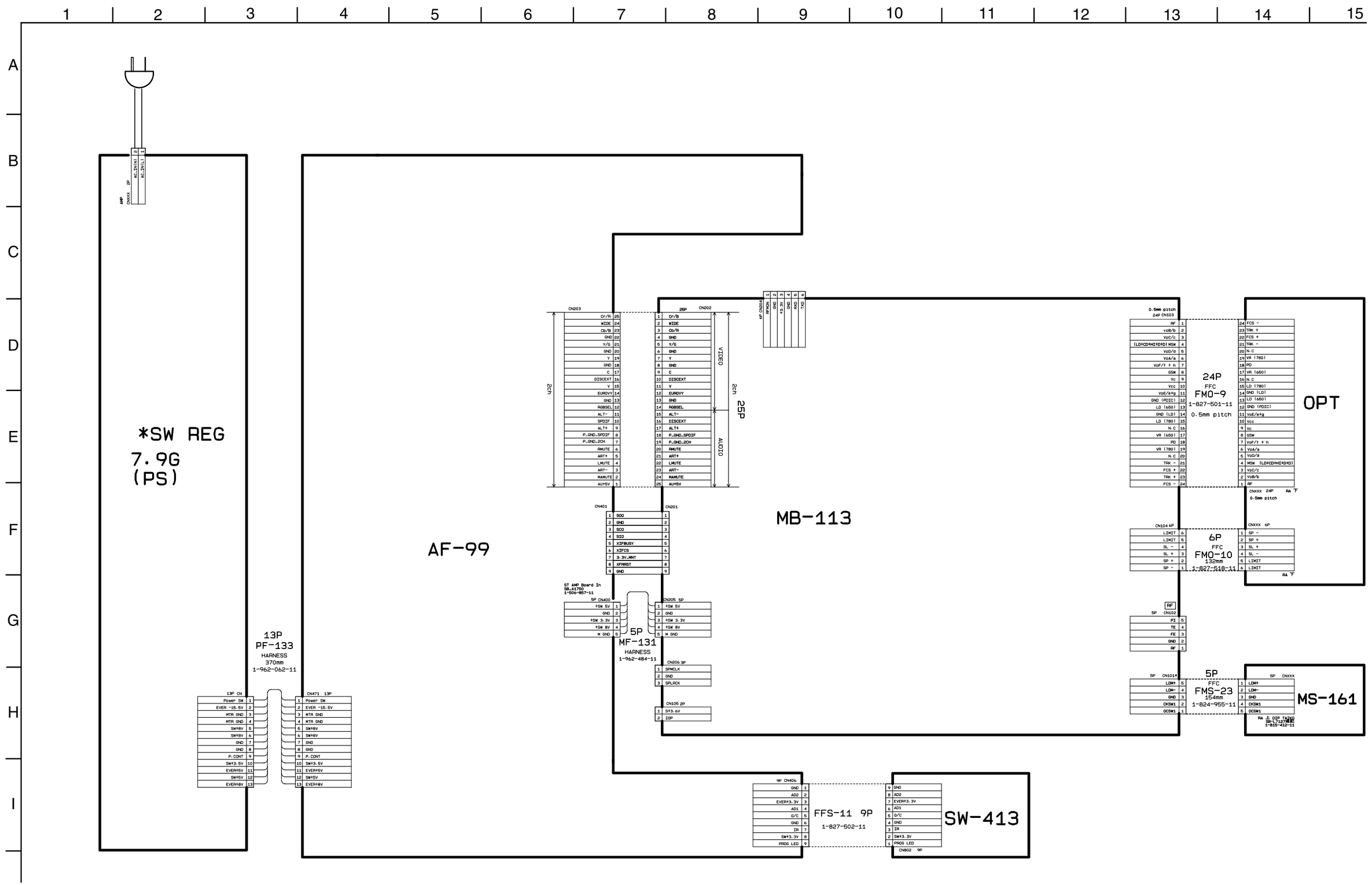


3-8. POWER BLOCK DIAGRAM (2/2)



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block)

For printed wiring boards:

- ○—— : indicates a lead wire mounted on the component side.
- •—— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ▭ : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side A)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side B)	Parts on the parts face side seen from the parts face are indicated.

For schematic diagrams:

- All capacitors are in µF unless otherwise noted. pF : µµF. 50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W (Chip resistors : 1/10W) unless otherwise specified.
  kΩ = 1000Ω, MΩ = 1000kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : non flammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- B+ : B+ Line.
- B– : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

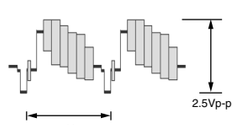
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

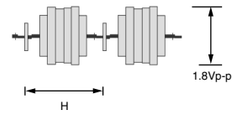
4-3. WAVEFORMS

AF-099 BOARD

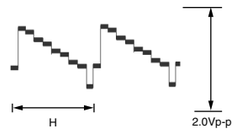
① IC102 ㉝



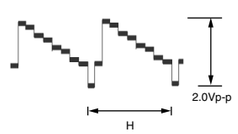
② IC102 ㉛



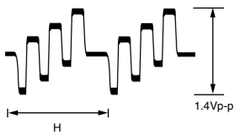
③ IC102 ㉘



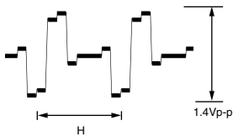
④ IC102 ㉔



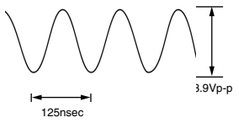
⑤ IC102 ㉒



⑥ IC102 ⑳

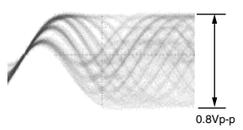


⑦ IC404 ③

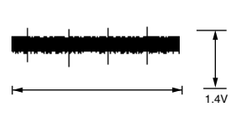


MB-113 BOARD

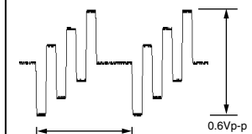
① IC102 ⑥ (CD PB)



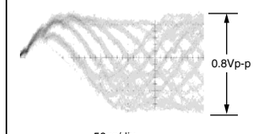
④ IC102 ㉑ (DVD PLAY)



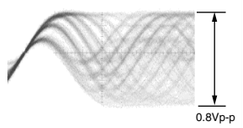
⑩ IC201 ㉗



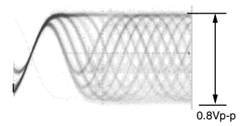
⑮ IC201 ㉑ ㉑ (DVD PLAY)



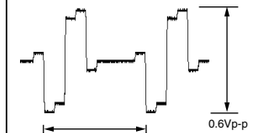
① IC102 ⑥ (DVD PB)



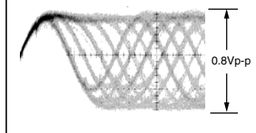
⑤ IC102 ㊻ (CD PB)



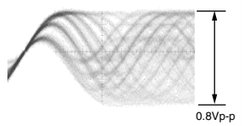
⑪ IC201 ㉗



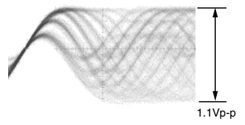
⑮ IC201 ㉑ ㉑ (CD PLAY)



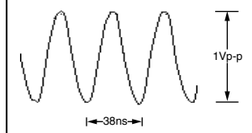
② IC102 ⑦ (CD PB)



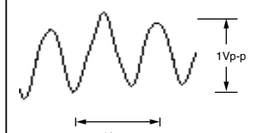
⑤ IC102 ㊻ (DVD PLAY)



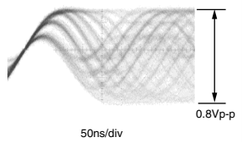
⑫ IC201 ㉘



⑯ IC206 ㊳ (CD)



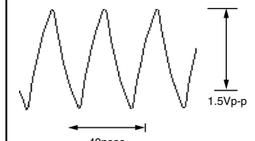
② IC102 ⑦ (DVD PB)



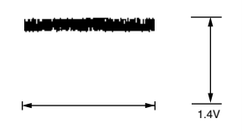
⑥ IC201 ㉞ C/BAR PB

⑬ IC201 ㉓ (CD)

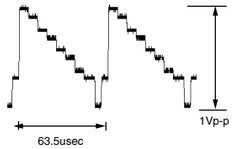
⑰ IC207 ① (DVD)



③ IC102 ⑱ (CD PLAY)

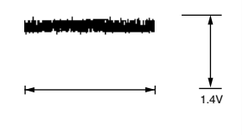


⑦ IC201 ㊱ C/BAR PB

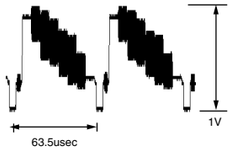


⑬ IC201 ㉓ (DVD)

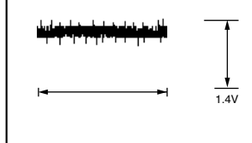
③ IC102 ⑱ (DVD PLAY)



⑧ IC201 ㊱ C/BAR PB

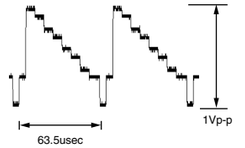


⑭ IC201 ㉕ (CD)

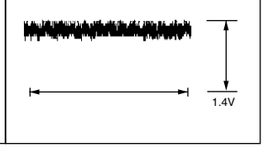


④ IC102 ㉑ (CD PLAY)

⑨ IC201 ㊲ C/BAR PB

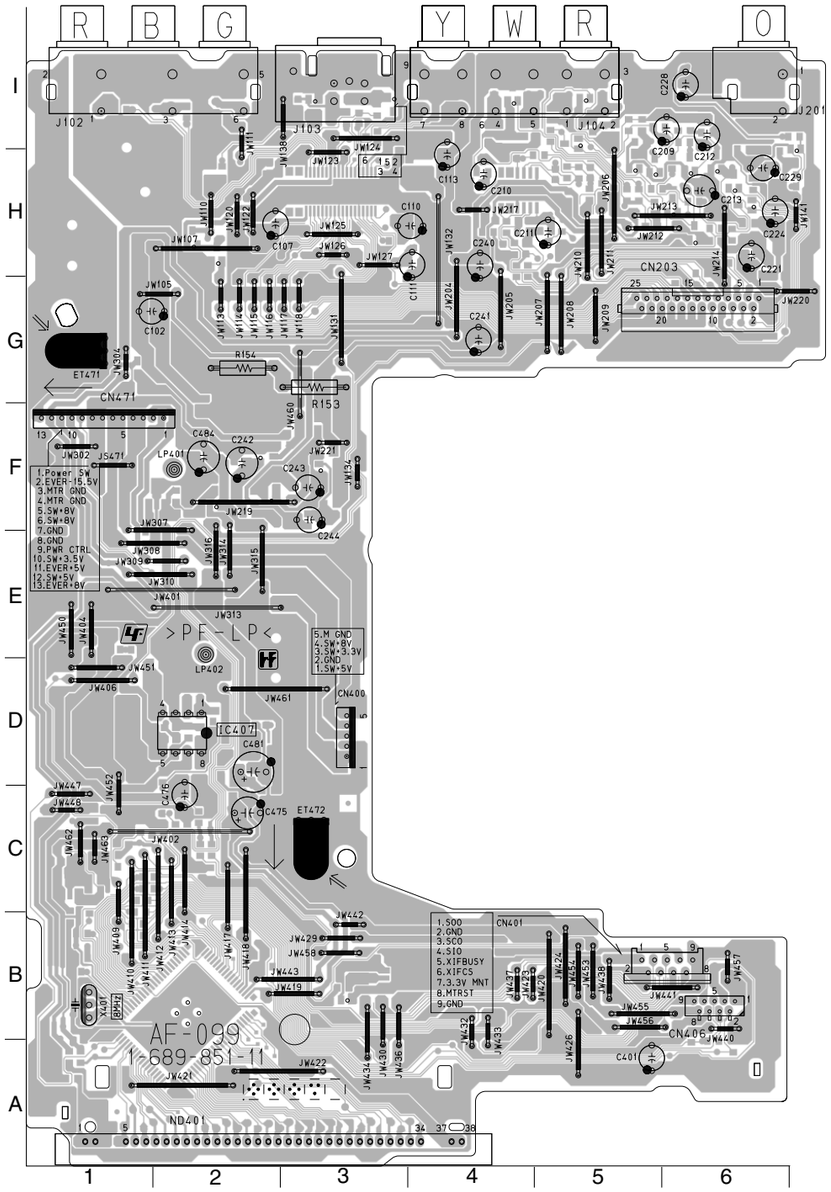


⑭ IC201 ㉕ (DVD)



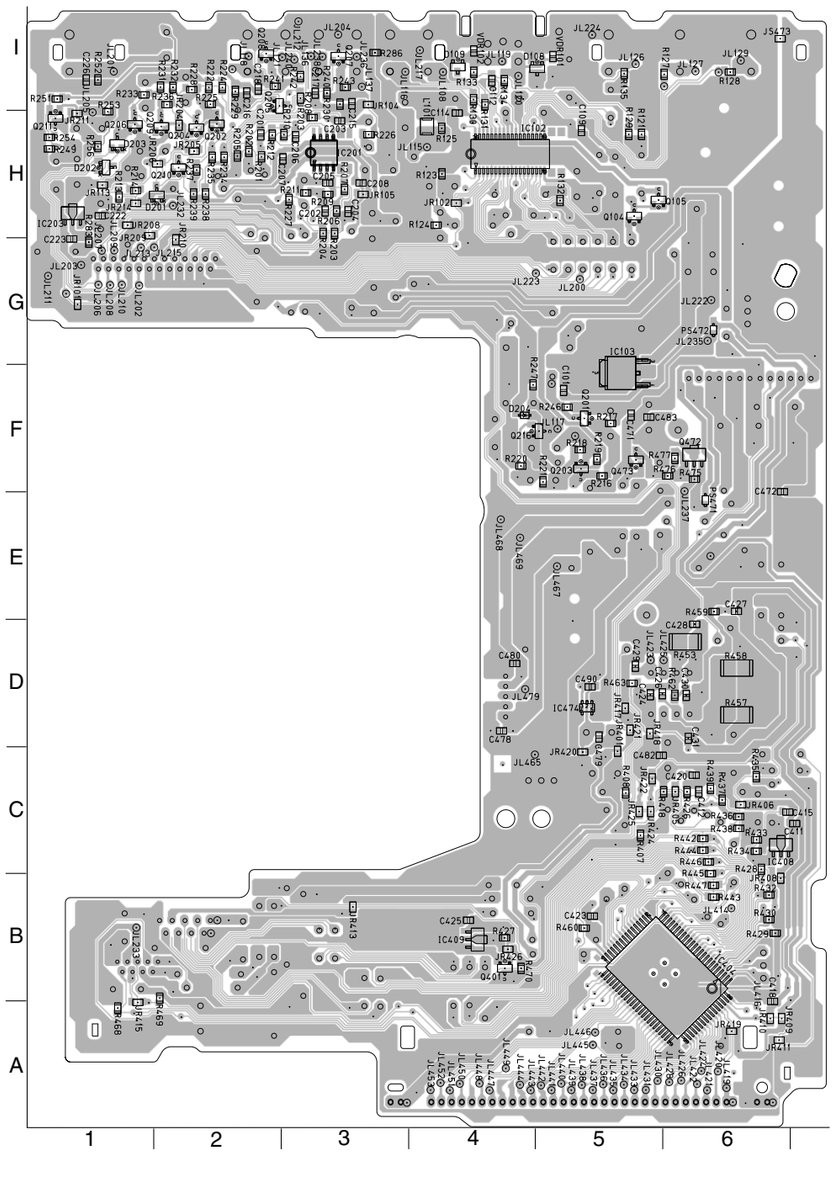
AF-099 (VIDEO OUT, AUDIO OUT, PS TROUGH, IF) PRINTED WIRING BOARD

AF-099 BOARD A SIDE



• : Uses unleaded solder.

AF-099 BOARD B SIDE

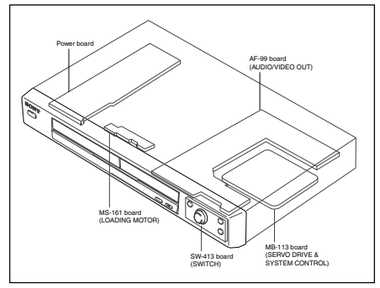


For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

AF-099 BOARD

A SIDE		B SIDE	
IC407	D-2	IC102	H-4
		IC103	F-5
		IC201	H-3
		IC203	H-1
		IC404	B-6
		IC408	C-6
		IC409	B-4
		IC474	D-5
		Q104	H-5
		Q105	H-6
		Q201	F-5
		Q202	H-2
		Q203	F-5
		Q204	H-2
		Q205	I-2
		Q206	H-1
		Q207	I-3
		Q208	I-2
		Q209	H-1
		Q210	H-2
		Q211	H-1
		Q216	F-4
		Q401	B-4
		Q472	F-6
		Q473	F-5
		D108	I-4
		D109	I-4
		D201	H-1
		D202	H-1
		D203	H-1
		D204	F-4

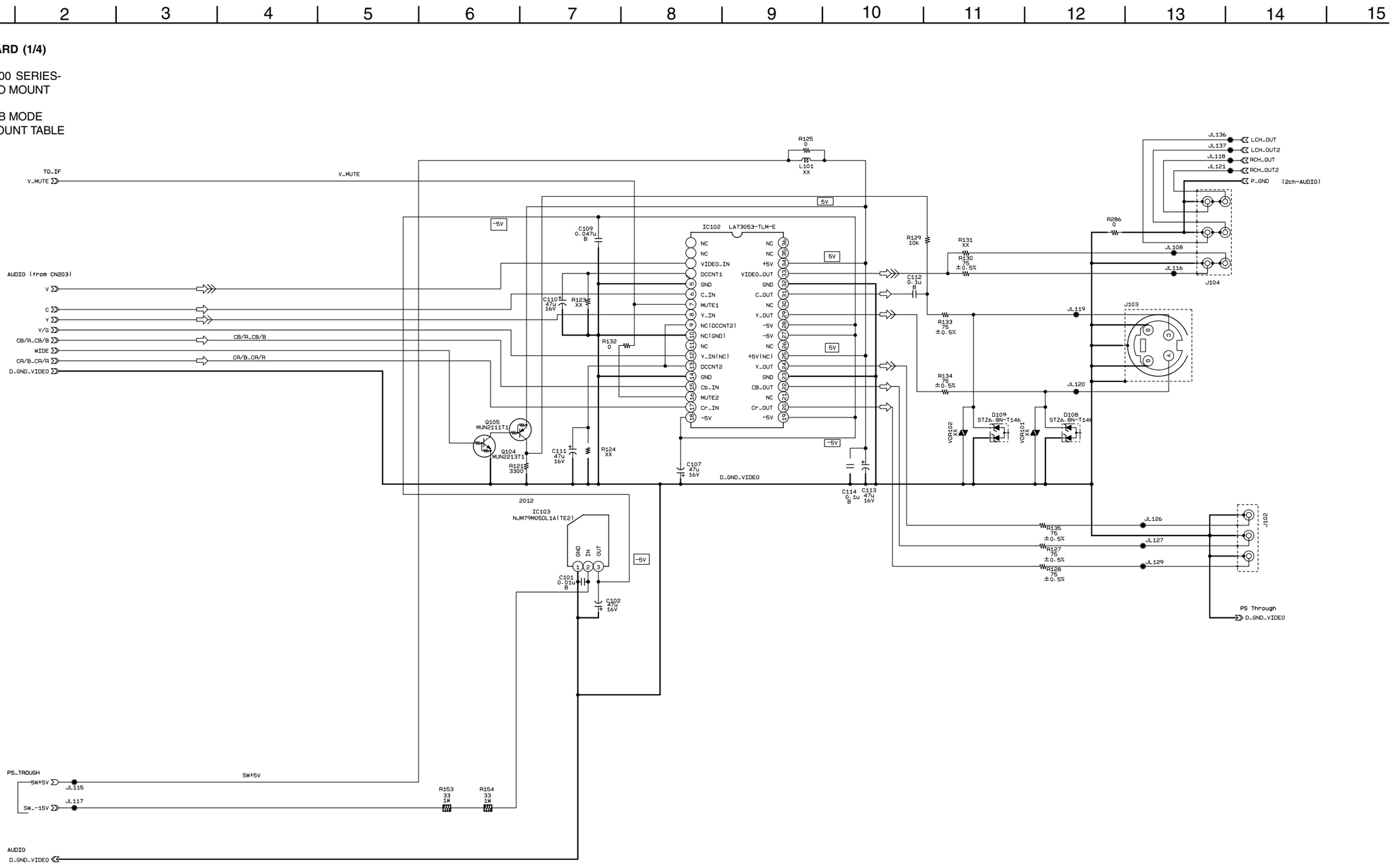


For Schematic Diagram

- Refer to page 4-7 for printed wiring board of AF-099 board.
- Refer to page 4-5 for waveform

AF-099 BOARD (1/4)
VIDEO OUT
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE
MARKED:MOUNT TABLE



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨	⇨	⇨

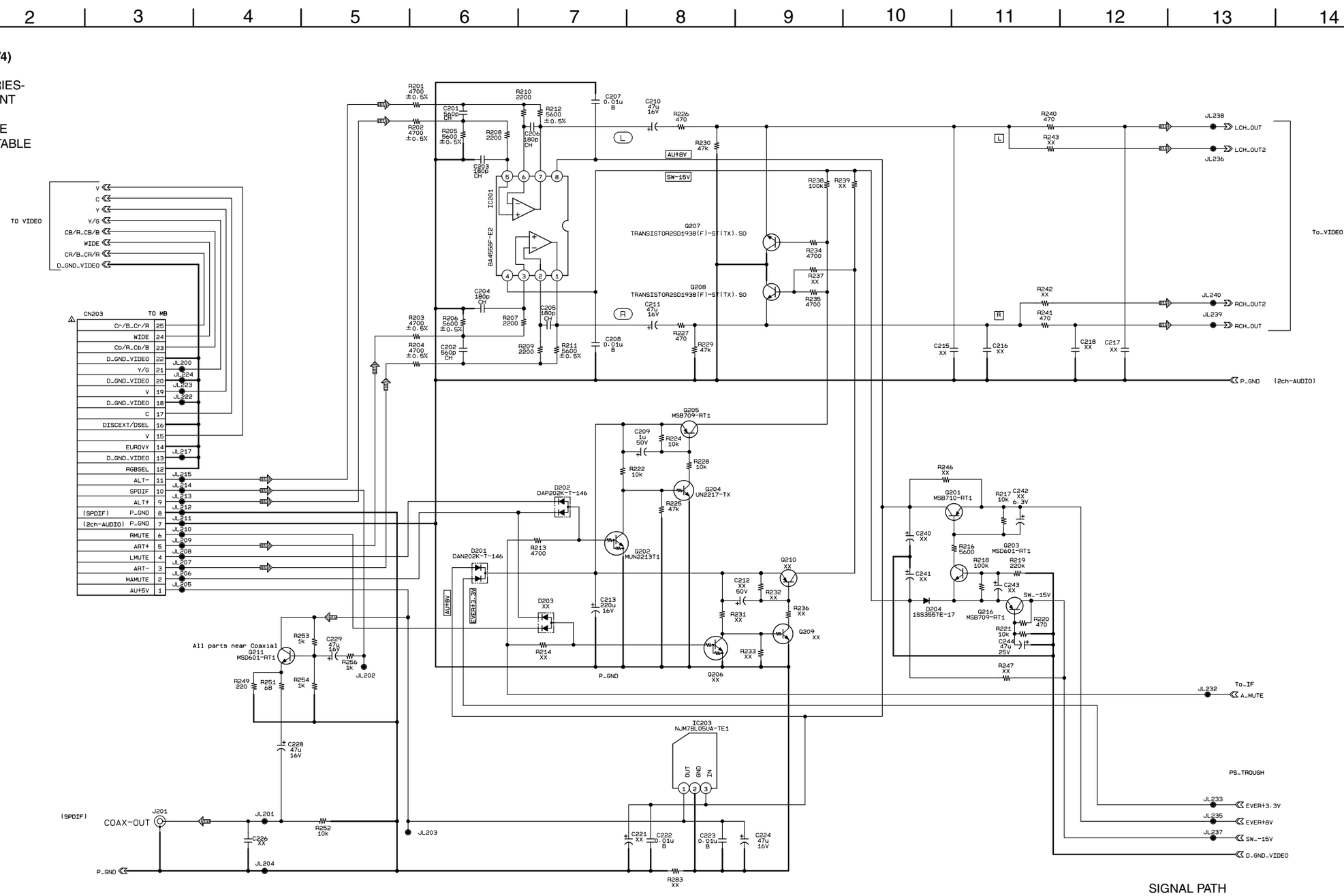
VIDEO OUT
AF-099 (1/4)

For Schematic Diagram

• Refer to page 4-7 for printed wiring board of AF-099 board.
• Refer to page 4-5 for waveform

AF-099 BOARD (2/4)
AUDIO OUT
-REF.NO.:2000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE
MARKED:MOUNT TABLE



SIGNAL PATH

SPINDLE SERVO (SPEED AND PHASE)	
TRACKING SERVO DVD/CD CDV	
SLED SERVO DVD/CD	
FOCUS SERVO	
SKEW SERVO DVD/CD	

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB				

AUDIO OUT
AF-099 (2/4)

For Schematic Diagram

- Refer to page 4-7 for printed wiring board of AF-099 board.
- Refer to page 4-5 for waveform

AF-099 BOARD (3/4)
PS TROUGH
-REF.NO.:4000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE
MARKED:MOUNT TABLE

CN471 13P

Power SW	1
EVER -15.5V	2
MTR GND	3
MTR GND	4
SW+8V	5
SW+8V	6
GND	7
GND	8
P.CONT	9
SW+3.5V	10
EVER+5V	11
SW+5V	12
EVER+8V	13

EVER-15V
SW+8V
SW+3.3V
M_GND
EVER+3.3V
SW_-15V
SW+5V
GND
POWER
P-CONT

IC474
MM1385DNLE

C476 47u 16V
C475 47u 16V
C490 0.01u B
C478 0.01u B
C480 0.01u B
C479 0.01u B
C481 XX 16V
C482 0.01u B
C483 0.01u B
C484 100u 25V
C471 0.01u B
C472 220p

PS471 0.7A
PS472 0.7A
R475 10k
R476 4700
R477 4700
Q472 2SD1766-T100-QR
MUN2111T1 Q473
JS471 XX
ET471
JS473 XX

LP401 XX
LP402

M_GND
EVER+3.3V
SW_-15V
SW+8V
GND
SW+3.3V
SW+5V
EVER+8V
POWER
P-CONT
EVER+5V
D_GND_VIDEO

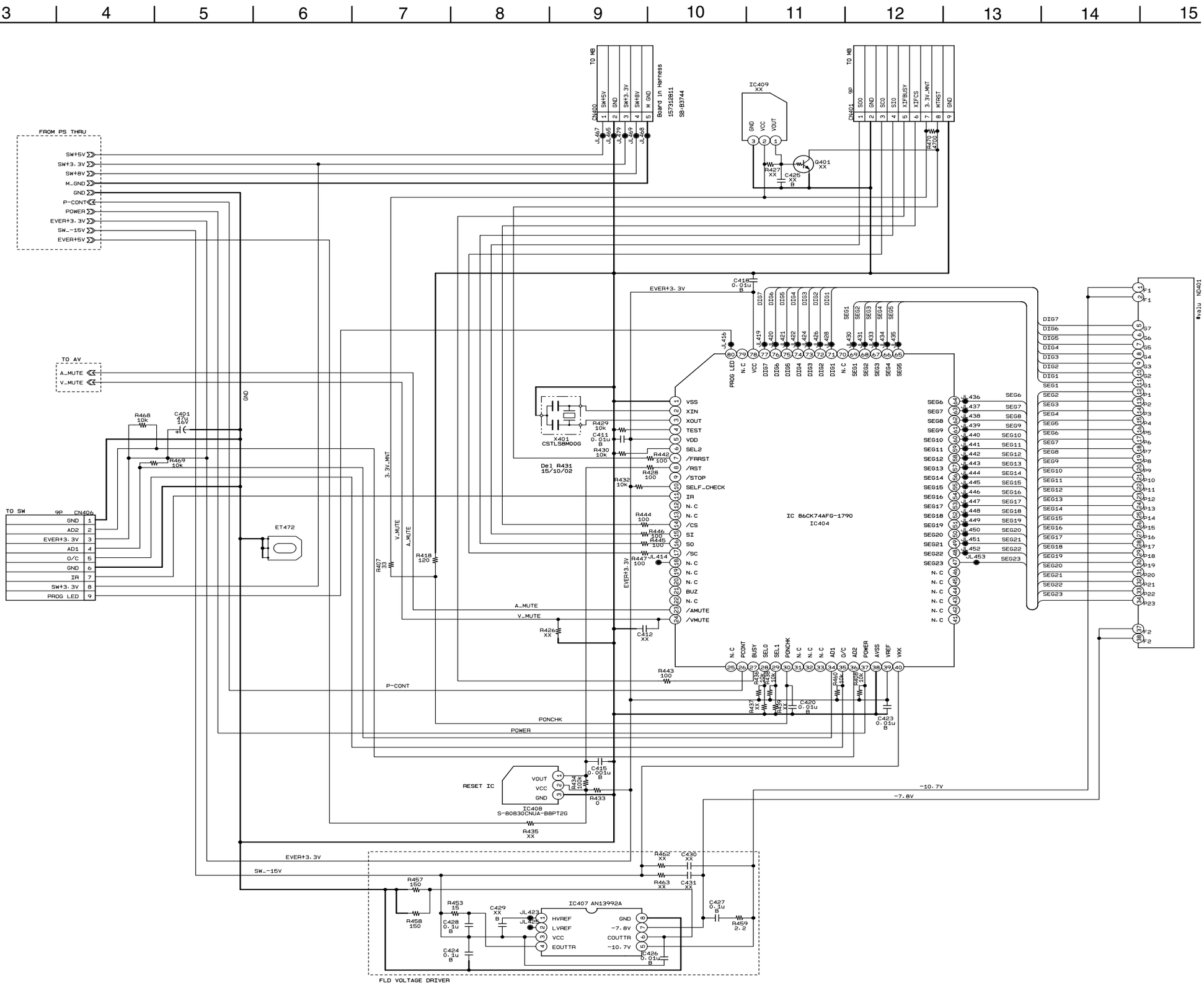
PS TROUGH
AF-099 (3/4)

For Schematic Diagram

• Refer to page 4-7 for printed wiring board of AF-099 board.
• Refer to page 4-5 for waveform

AF-099 BOARD (4/4)
IF
-REF.NO.:4000 SERIES-
XX MARK:NO MOUNT

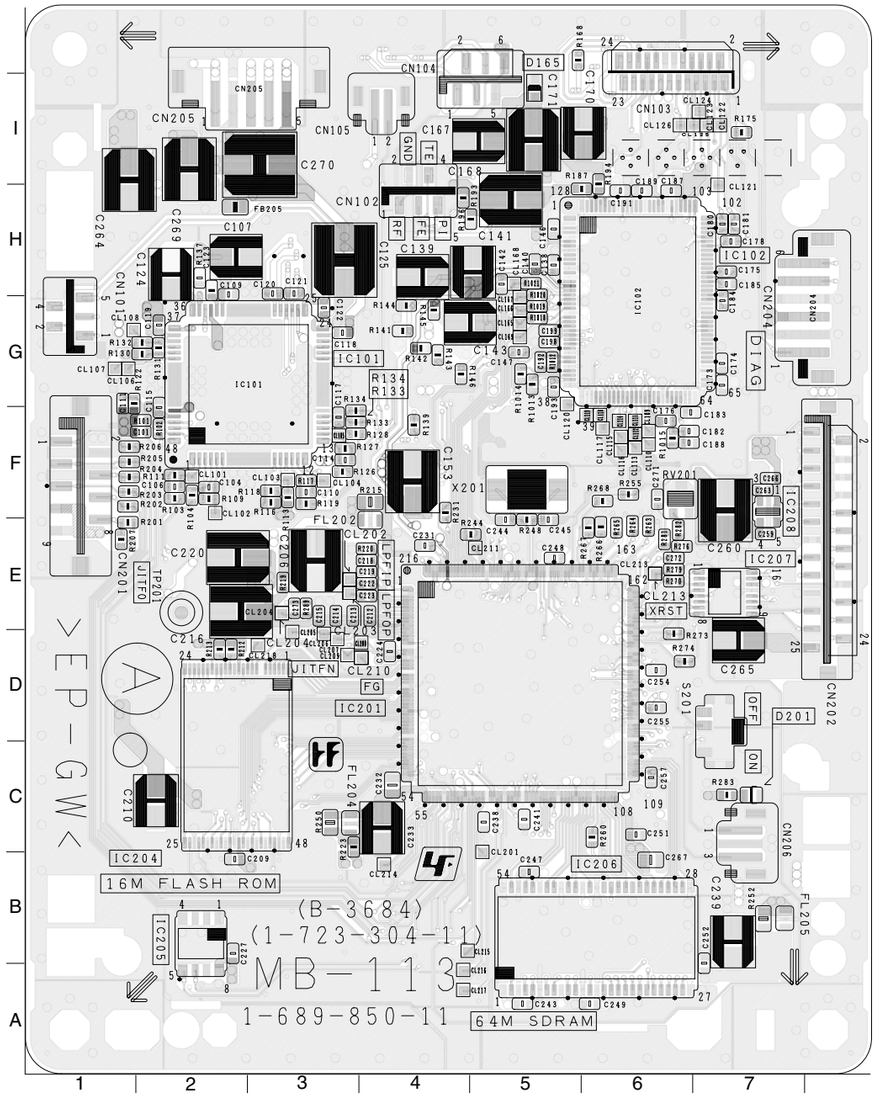
NO MARK:PB MODE
MARKED:MOUNT TABLE



MB-113 (SERVO DRIVE, SYSTEM CONTROL) PRINTED WIRING BOARD

• : Uses unleaded solder.

MB-113 BOARD SIDE A

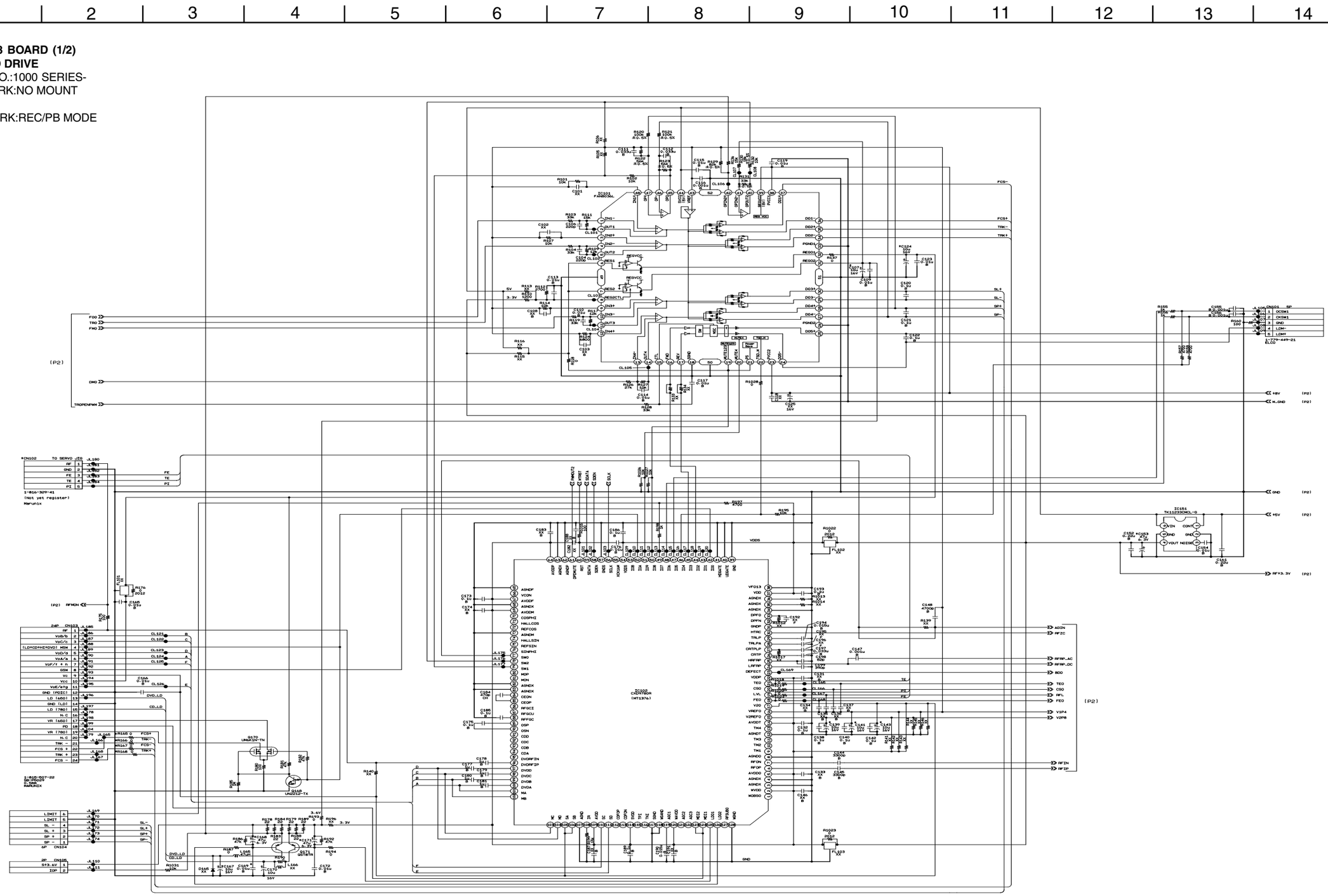


For Schematic Diagram

• Refer to page 4-17 for printed wiring board of MB-113 board.
• Refer to page 4-5 for waveform

MB-113 BOARD (1/2)
SERVO DRIVE
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

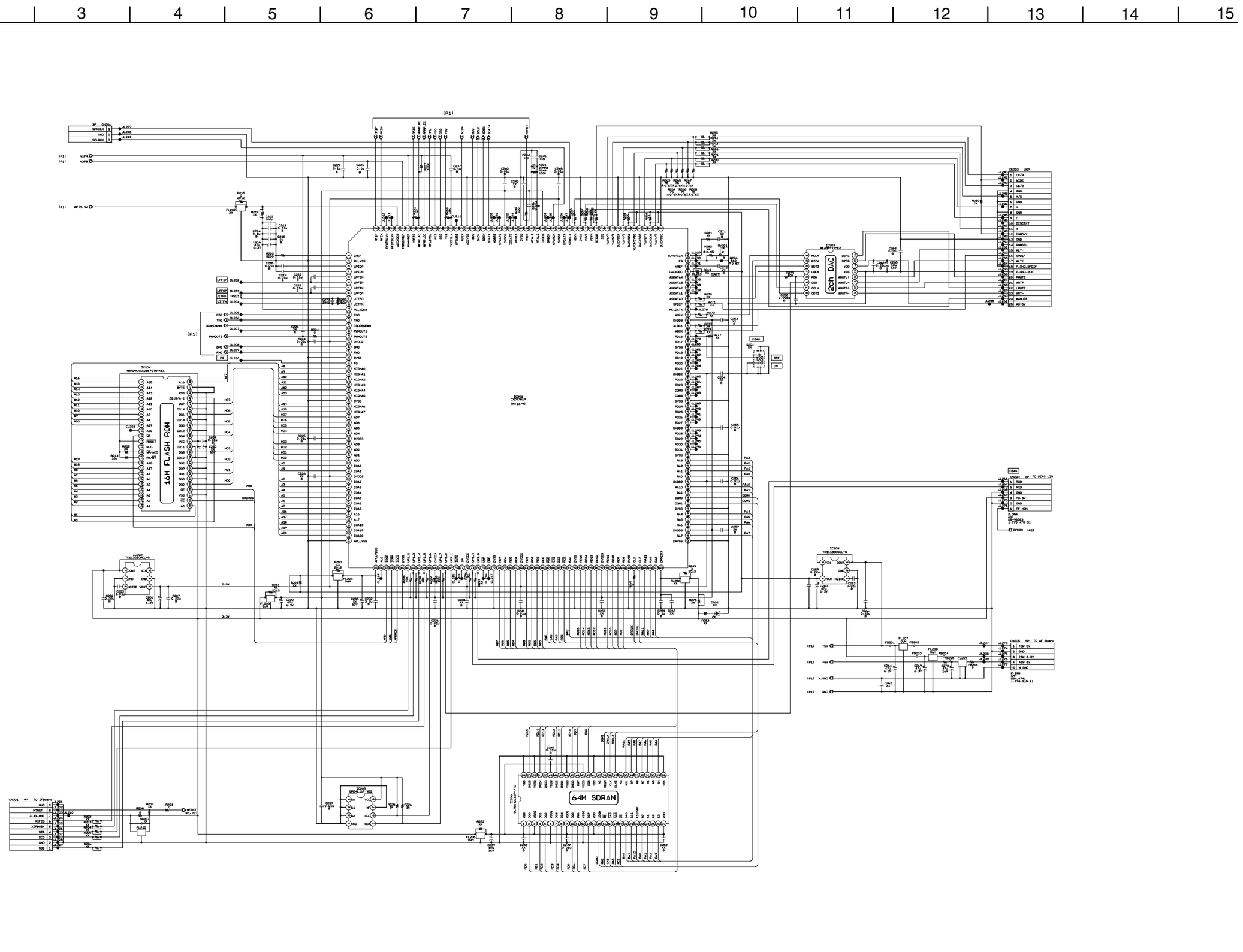
SERVO DRIVE
MB-113 (1/2)

For Schematic Diagram

- Refer to page 4-17 for printed wiring board of MB-113 board.
- Refer to page 4-5 for waveform

MB-113 BOARD (2/2)
SYSTEM CONTROL
-REF.NO.:2000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE

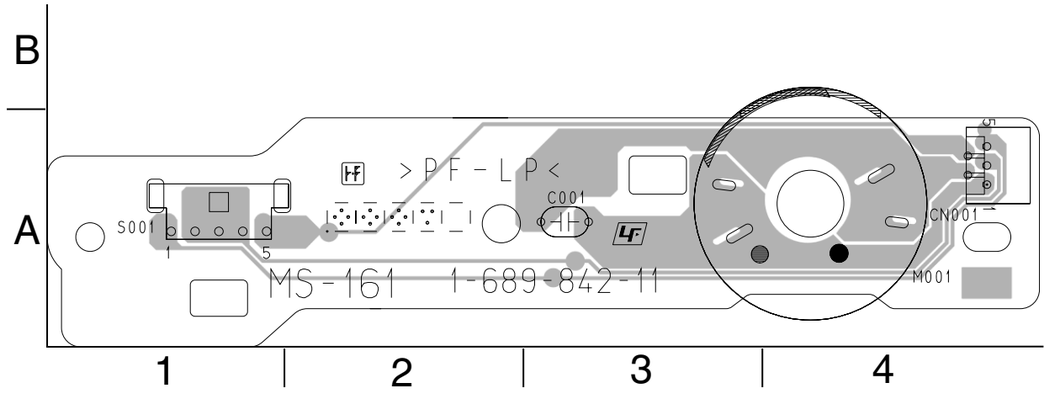


SYSTEM CONTROL
MB-113 (2/2)

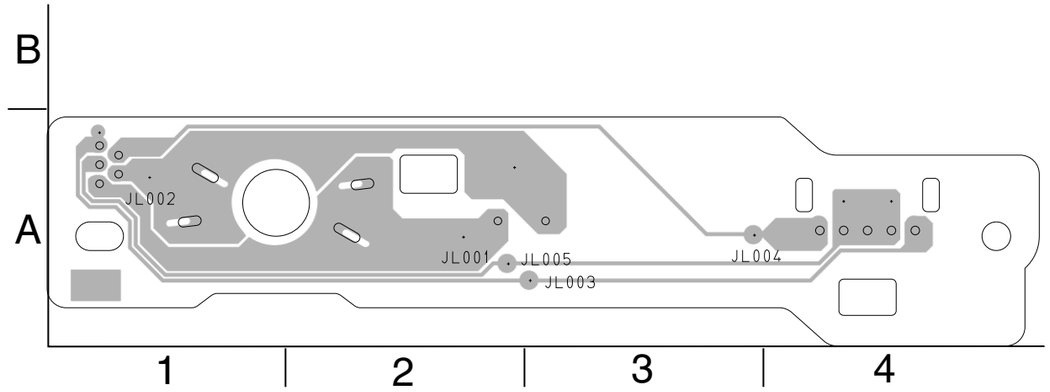
MB-161 (MECHA DECK) PRINTED WIRING BOARD

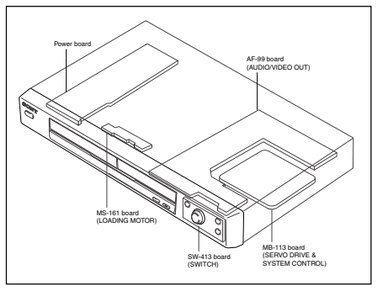
• : Uses unleaded solder.

MS-161 BOARD A SIDE



MS-161 BOARD B SIDE



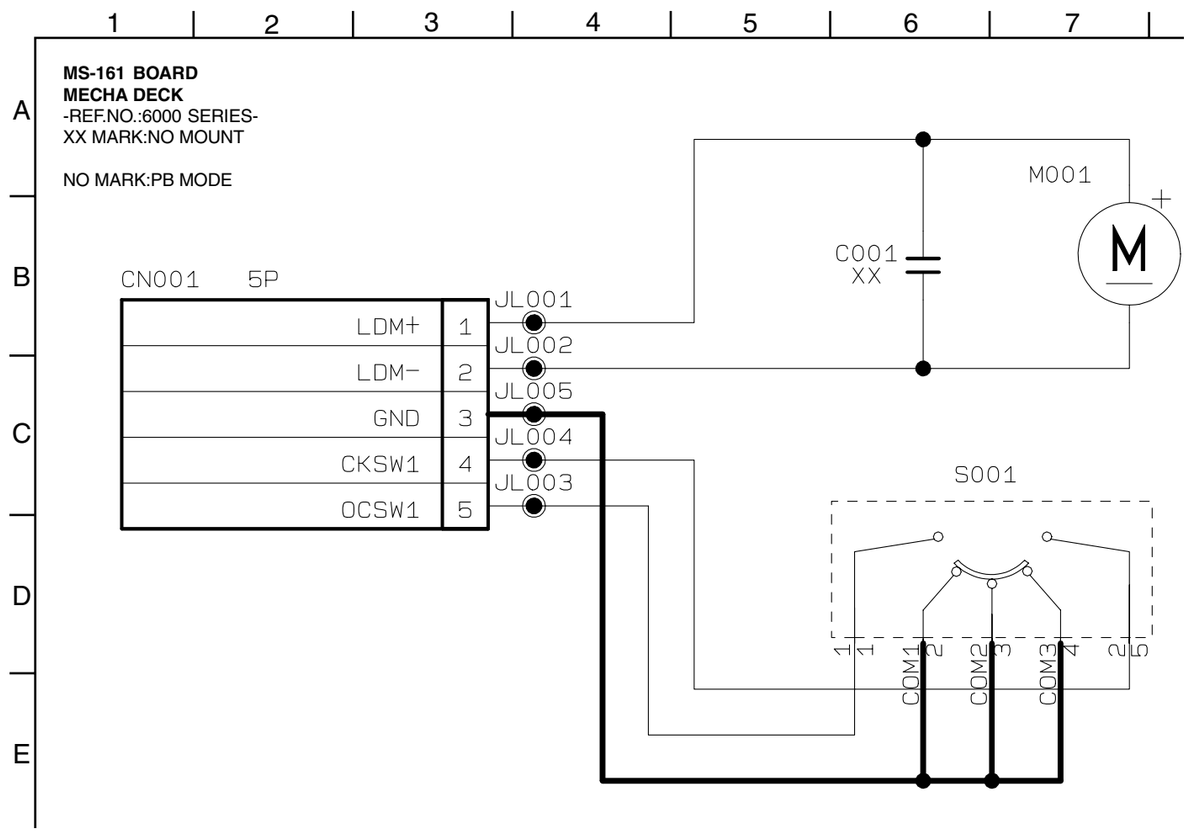


For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

For Schematic Diagram

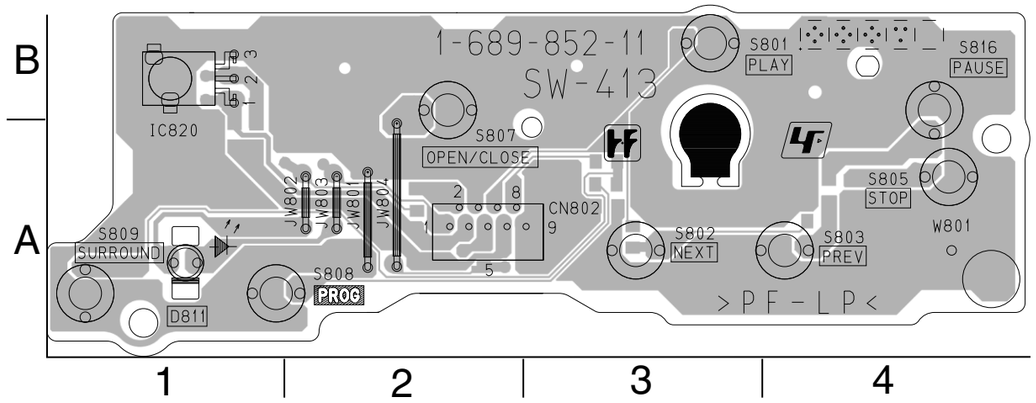
• Refer to page 4-23 for printed wiring board of MS-161 board.



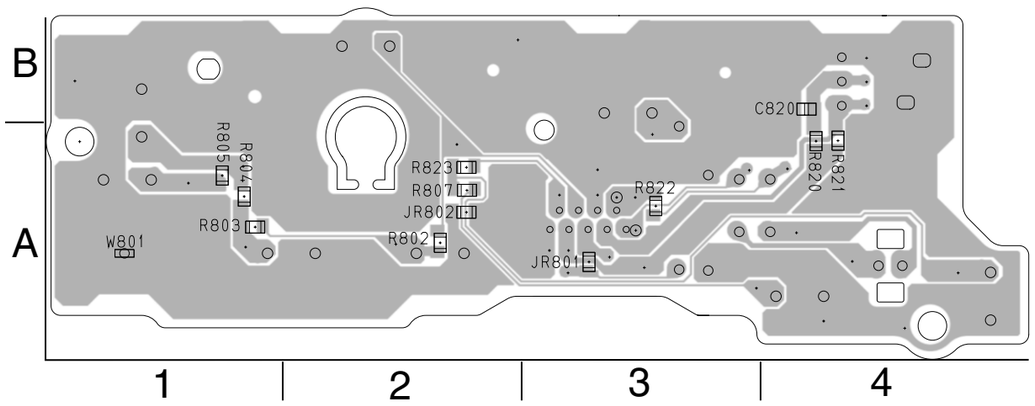
SW-413 (SWITCH) PRINTED WIRING BOARD

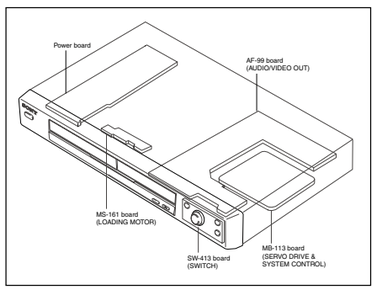
• : Uses unleaded solder.

SW-413 BOARD A SIDE



SW-413 BOARD B SIDE





SW-413 BOARD

A SIDE

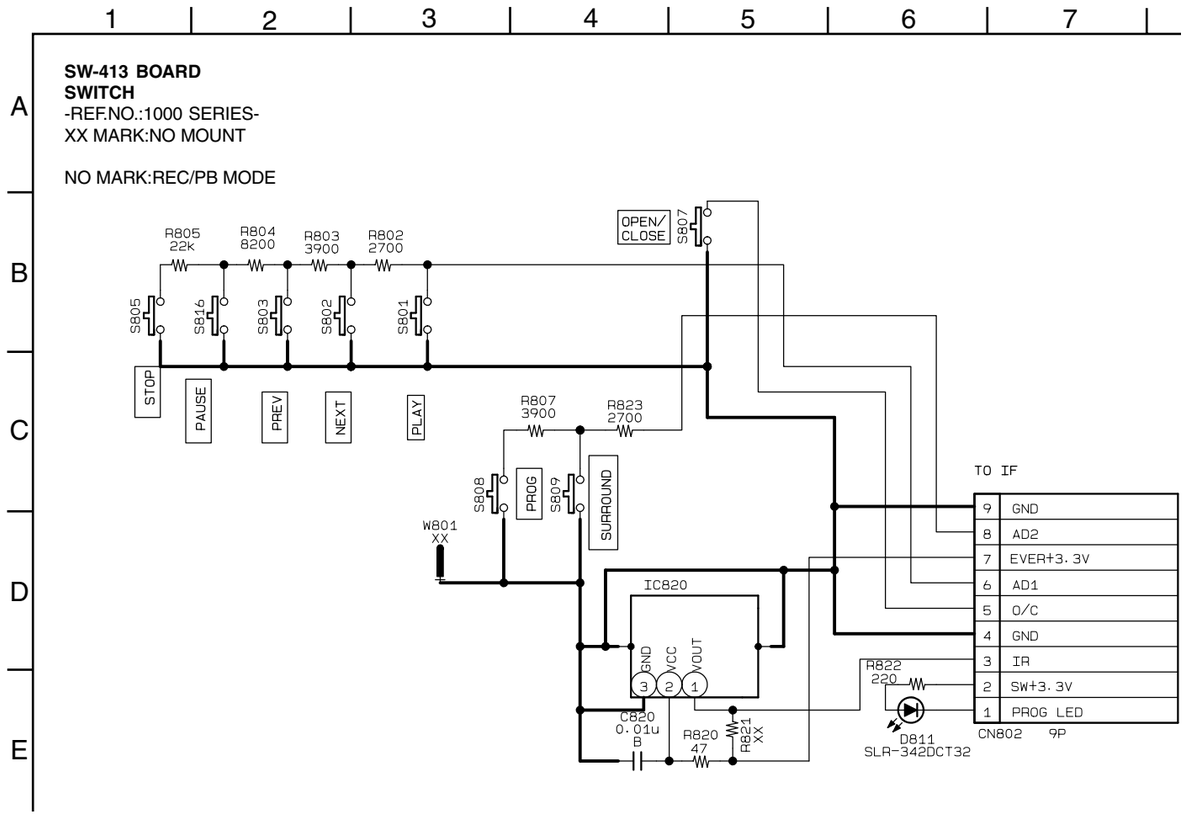
IC820	A-1
D811	A-1

For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

For Schematic Diagram

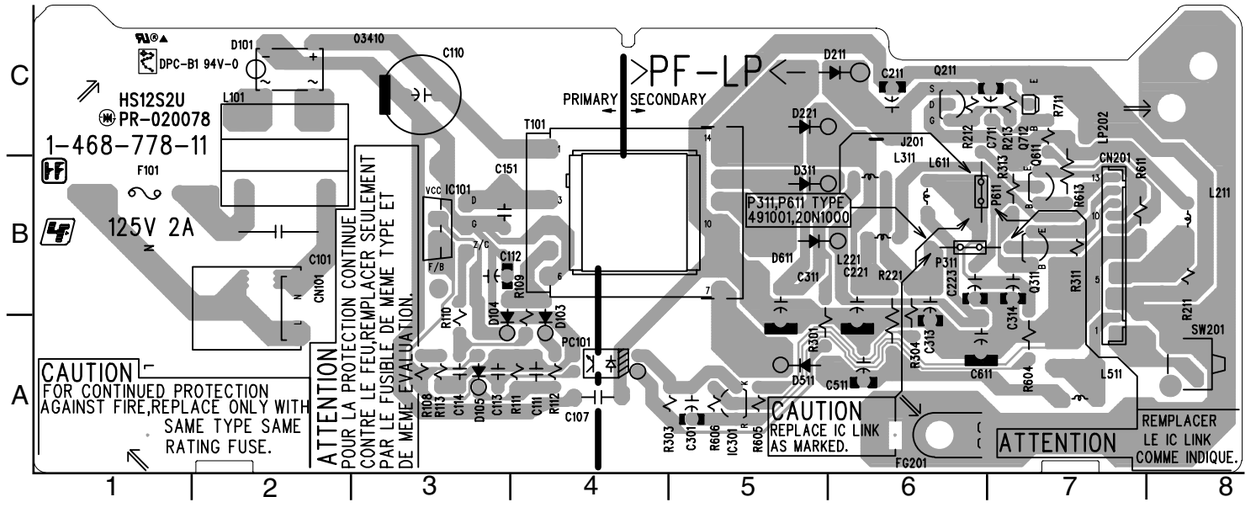
• Refer to page 4-25 for printed wiring board of SW-413 board.

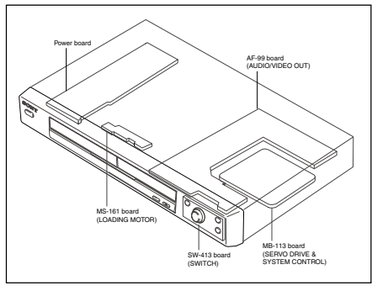


HS12S2U (SWITCHING REGULATOR) PRINTED WIRING BOARD

• : Uses unleaded solder.

POWER BOARD (SW REG)
(HS12S2U)





For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

POWER BLOCK
(HS12S2U)

A SIDE

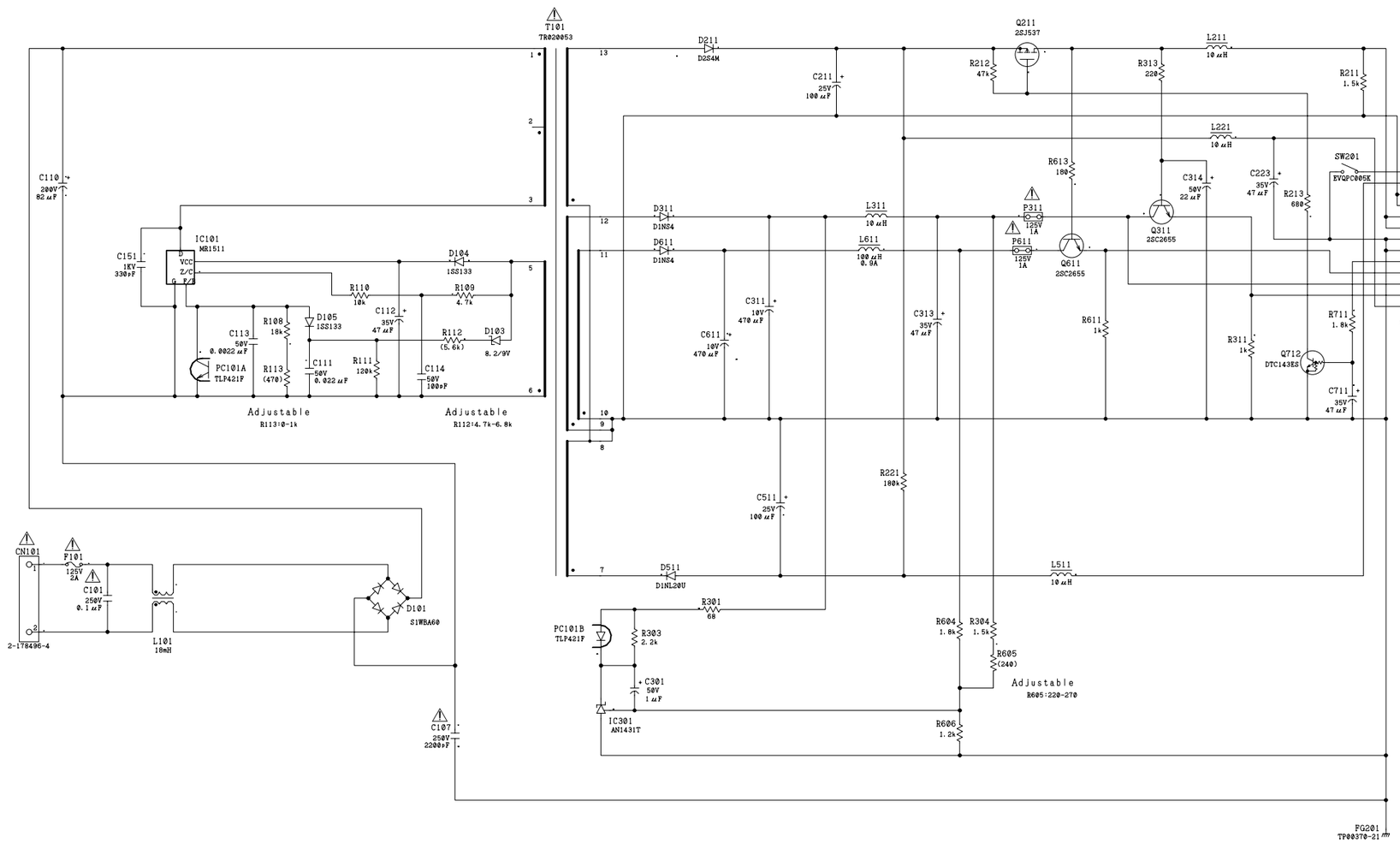
IC101	B-3
IC301	A-5
Q211	C-6
Q311	B-7
Q611	C-7
Q712	C-7
D101	C-2
D103	A-4
D104	A-3
D105	A-3
D211	C-6
D221	C-5
D311	B-5
D511	A-5
D611	B-5

For Schematic Diagram

• Refer to page 4-27 for printed wiring board of HS12S2U board.

HS12S2U BOARD
SWITCHING REGULATOR
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SWITCHING REGULATOR
POWER BLOCK (HS12S2U)

MEMO

SECTION 5
IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION (MB-113 BOARD IC201)

Pin No.	Pin name	Type	Function
1	IREF	Analog Input	Current reference input. It generates reference current for data PLL. Connect an external 100K resistor to this pin and PLLVSS.
2	PLLVSS	Ground	Ground pin for data PLL and related analog circuitry
3	LPIOP	Analog Output	Positive output of the low pass filter
4	LPION	Analog Output	Negative output of the low pass filter
5	LPFON	Analog Output	Negative output of loop filter amplifier
6	LPFIP	Analog Input	Positive input of loop filter amplifier
7	LPFIN	Analog Input	Negative input of loop filter amplifier
8	LDFOP	Analog Output	Positive output of loop filter amplifier
9	JITFO	Analog Output	RF jitter meter output
10	JITFN	Analog Input	Negative input of the operation amplifier for RF jigger meter
11	PLLVDD3	Power	3.3V power pin for data PLL and related analog circuitry
12	FOO	Analog Output	Focus servo output. PDM output of focus servo compensator
13	TRO	Analog Output	Tracking servo output. PDM output of tracking servo compensator
14	TROPENPWM	Analog Output	Tray open output, controlled by microcontroller. This is PWM output for TRWMEN27hRW2=1 or is digital output for TRWMEN27hRW2=0
15	PWMOUT1	Analog Output	The 1st general PWM output
16	PWMOUT2	Analog Output	The 2nd general PWM output
17	DVDD2	Power	2.5V power pin for internal fully digital circuitry
18	DMO	Analog Output	Disk motor control output. PWM output
19	FMO	Analog Output	Feed motor control. PWM output
20	DVSS	Ground	Ground pin for internal fully digital circuitry
21	FG	Input	Motor Hall sensor input
22	HIGHA0	Inout 2~16MA, SR PU	Microcontroller address 8
23	HIGHA1	Inout 2~16MA, SR PU	Microcontroller address 9
24	HIGHA2	Inout 2~16MA, SR PU	Microcontroller address 10
25	HIGHA3	Inout 2~16MA, SR PU	Microcontroller address 11
26	HIGHA4	Inout 2~16MA, SR PU	Microcontroller address 12
27	HIGHA5	Inout 2~16MA, SR PU	Microcontroller address 13
28	DVSS	Ground	Ground pin for internal digital circuitry
29	HIGHA6	Inout 2~16MA, SR PU	Microcontroller address 14
30	HIGHA7	Inout 2~16MA, SR PU	Microcontroller address 15
31	AD7	Inout 2~16MA, SR	Microcontroller address/data 7
32	AD6	Inout 2~16MA, SR	Microcontroller address/data 6
33	AD5	Inout 2~16MA, SR	Microcontroller address/data 5

Pin No.	Pin name	Type	Function
34	AD4	Inout 2~16MA, SR	Microcontroller address/data 4
35	DVDD3	Power	3.3V power pin for internal digital circuitry
36	AD3	Inout 2~16MA, SR	Microcontroller address/data 3
37	AD2	Inout 2~16MA, SR	Microcontroller address/data 2
38	AD1	Inout 2~16MA, SR	Microcontroller address/data 1
39	AD0	Inout 2~16MA, SR	Microcontroller address/data 0
40	IOA0	Inout 2~16MA, SR PU	Microcontroller address 0/10
41	IOA1	Inout 2~16MA, SR PU	Microcontroller address 1/10
42	DVDD2	Power	2.5V power pin for internal digital circuitry
43	IOA2	Inout 2~16MA, SR PU	Microcontroller address 2/10
44	IOA3	Inout 2~16MA, SR PU	Microcontroller address 3/10
45	IOA4	Inout 2~16MA, SR PU	Microcontroller address 4/10
46	IOA5	Inout 2~16MA, SR PU	Microcontroller address 5/10
47	IOA6	Inout 2~16MA, SR PU	Microcontroller address 6/10
48	IOA7	Inout 2~16MA, SR PU	Microcontroller address 7/10
49	A16	Output 2~16MA, SR	Flash address 16
50	A17	Output 2~16MA, SR	Flash address 17
51	IOA18	Inout 2~16MA, SR SMT	Flash address 18/10
52	IOA19	Inout 2~16MA, SR SMT	Flash address 19/10
53	IOA20	Inout 2~16MA, SR SMT	Flash address 20/10 OR Videoin Data PortB 0
54	APLLVSS	Ground	Ground pin for audio clock circuitry
55	APLLVDD3	Power	3.3V Power pin for audio clock circuitry
56	ALE	Inout 2~16MA, SR PU, SMT	Microcontroller address latch enable
57	IOOE#	Inout 2~16MA, SR SMT	Flash output enable, active low / 10
58	IOWR#	Inout 2~16MA, SR SMT	Flash write enable, active low / 10

Pin No.	Pin name	Type	Function
59	IOCS#	Inout 2~16MA, SR PU, SMT	Flash chip select, active low / 10
60	DVSS	Ground	Ground pin for internal digital circuitry
61	UP1_2	Inout 4MA, SR PU, SMT	Microcontroller port 1-2
62	UP1_3	Inout 4MA, SR PU, SMT	Microcontroller port 1-3
63	UP1_4	Inout 4MA, SR PU, SMT	Microcontroller port 1-4
64	UP1_5	Inout 4MA, SR PU, SMT	Microcontroller port 1-5
65	UP1_6	Inout 4MA, SR PU, SMT	Microcontroller port 1-6
66	DVDD3	Power	3.3V power pin for internal digital circuitry
67	UP1_7	Inout 4MA, SR PU, SMT	Microcontroller port 1-7
68	UP3_0	Inout 4MA, SR PU, SMT	Microcontroller port 3-0
69	UP3_1	Inout 4MA, SR PU, SMT	Microcontroller port 3-1
70	INT0#	Inout 2~16MA, SR PU, SMT	Microcontroller interrupt 0, active low
71	IR	Input SMT	IR control signal input
72	DVDD2	Power	2.5V power pin for internal digital circuitry
73	UP3_4	Inout	Microcontroller port 3-4
74	UP3_5	Inout	Microcontroller port 3-5
75	UWR#	Inout 2~16MA, SR PU, SMT	Microcontroller write strobe, active low
76	URD#	Inout 2~16MA, SR PU, SMT	Microcontroller read strobe, active low
77	DVSS	Ground	Ground pin for internal digital circuitry
78	RD7	Inout	DRAM data 7
79	RD6	Inout	DRAM data 6
80	RD5	Inout	DRAM data 5
81	RD4	Inout	DRAM data 4
82	DVDD2	Power	2.5V power pin for internal digital circuitry
83	RD3	Inout	DRAM data 3
84	RD2	Inout	DRAM data 2
85	RD1	Inout	DRAM data 1
86	RD0	Inout	DRAM data 0
87	RWE#	Output 2~16MA, SR	DRAM Write enable, active low
88	CAS#	Output 2~16MA, SR	DRAM columnaddress strobe, active low
89	RAS#	Output 2~16MA, SR	DRAM row address strobe, active low

Pin No.	Pin name	Type	Function
90	RCS#	Output 2~16MA, SR	DRAM chip select, active low
91	BA0	Output 2~16MA, SR	DRAM bank address 0
92	DVSS	Ground	Ground pin for internal digital circuitry
93	RD15	Inout 2~16MA, SR PU/PD, SMT	DRAM data 15
94	RD14	Inout 2~16MA, SR PU/PD, SMT	DRAM data 14
95	RD13	Inout 2~16MA, SR PU/PD, SMT	DRAM data 13
96	RD12	Inout 2~16MA, SR PU/PD, SMT	DRAM data12
97	DVDD3	Power	3.3V power pin for internal digital circuitry
98	RD11	Inout 2~16MA, SR PU/PD, SMT	DRAM data 11
99	RD10	Inout 2~16MA, SR PU/PD, SMT	DRAM data 10
100	RD9	Inout 2~16MA, SR PU/PD, SMT	DRAM data 9
101	RD8	Inout 2~16MA, SR PU/PD, SMT	DRAM data 8
102	DVSS	Ground	Ground pin for internal digital circuitry
103	CLK	Output 2~16MA, SR	DRAM clock
104	CLE	Output 2~16MA, SR	DRAM clock enable
105	RA11	Output 2~16MA, SR	DRAM address bit 11 or audio serial data 3 (channel 7/8)
106	RA9	Output 2~16MA, SR	DRAM address 9
107	RA8	Output 2~16MA, SR	DRAM address 8
108	DMVDD3	Power	3.3V Power pin for DRAM clock circuitry
109	DMVSS	Ground	Ground pin for DRAM clock circuitry
110	RA7	Output 2~16MA, SR	DRAM address 7
111	DVDD3	Power	3.3V power pin for internal digital circuitry
112	RA6	Output 2~16MA, SR	DRAM address 6
113	RA5	Output 2~16MA, SR	DRAM address 5
114	RA4	Output 2~16MA, SR	DRAM address 4
115	DVSS	Ground	Ground pin for internal digital circuitry
116	DQM1	Output 2~16MA, SR	Mask for DRAM input/output byte 1
117	DQM0	Output 2~16MA, SR	Mask for DRAM input/output byte 0
118	BA1	Output 2~16MA, SR	DRAM bank address 0
119	RA10	Output 2~16MA, SR	DRAM address 10

Pin No.	Pin name	Type	Function
120	DVDD2	Power	2.5V power pin for internal digital circuitry
121	RA0	Output 2~16MA, SR	DRAM address 0
122	RA1	Output 2~16MA, SR	DRAM address 1
123	RA2	Output 2~16MA, SR	DRAm address 2
124	RA3	Output 2~16MA, SR	DRAM address 3
125	DVSS	Ground	Ground pin for internal digital circuitry
126	RD31	Inout 2~16MA, SR PU/PD, SMT	DRAM data 31
127	RD30	Inout 2~16MA, SR PU/PD, SMT'	DRAM data 30
128	RD29	Inout 2~16MA, SR PU/PD, SMT	DRAM data 29
129	RD28	Inout 2~16MA, SR PU/PD, SMT	DRAM data 28
130	DVDD3	Power	3.3V power pin for internal digital circuitry
131	RD27	Inout 2~16MA, SR PU/PD, SMT	DRAM data 27
132	RD26	Inout 2~16MA, SR PU/PD, SMT	DRAM data 26
133	RD25	Inout 2~16MA, SR PU/PD, SMT	DRAM data 25
134	RD24	Inout 2~16MA, SR PU/PD, SMT	DRAM data 24
135	DVSS	Ground	Ground pin for internal digital circuitry
136	DQM3	Output 2~16MA, SR	Mask for DRAM input/output byte 3
137	DQM2	Output 2~16MA, SR	Mask for DRAM input/output byte 2
138	RD23	Inout 2~16MA, SR PU/PD, SMT	DRAM data 23 / Videoin Data PortA 7
139	RD22	Inout 2~16MA, SR PU/PD, SMT	DRAM data 22 / Videoin Data PortA 6
140	DVDD2	Power	2.5V power pin for internal digital circuitry
141	RD21	Inout 2~16MA, SR PU/PD, SMT	DRAM data 21 / Videoin Data PortA 5
142	RD20	Inout 2~16MA, SR PU/PD, SMT	DRAM data 20 / Videoin Data PortA 4
143	RD19	Inout 2~16MA, SR PU/PD, SMT	DRAM data 19 / Videoin Data PortA 3
144	RD18	Inout 2~16MA, SR PU/PD, SMT	DRAM data 18 / Videoin Data PortA 2
145	DVSS	Ground	Ground pin for internal digital circuitry

Pin No.	Pin name	Type	Function
146	RD17	Inout 2~16MA, SR PU/PD, SMT	DRAM data 17 / Videoin Data PortA 1
147	RD16	Inout 2~16MA, SR PU/PD, SMT	DRAM data 16 / Videoin Data PortA 0
148	ABCK	Output 4MA	Audio bit clock
149	ALRCK	Inout 4MA, PD, SMT	(1) Audio left/right channel clock (2) Trap value in power-on reset : 1 : use external 373 0 : use internal 373
150	DVDD3	Power	3.3V power pin for internal digital circuitry
151	ACLK	Inout 4MA	Audio DAC master clock (384/256 audio sample frequency)
152	MC_DATA	Input	Microphone serial input
153	SPDIF	Output 2~16MA, SR : ON/OFF	SPDIF output
154	ASDATA0	Inout 4MA PD SMT	(1) Audio serial data 0 (left/right channel) (2) Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation
155	ASDATA1	Inout 4MA PD SMT	(1) Audio serial data 1 (surround left/surround right channel) (2) Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation
156	ASDATA2	Inout 4MA PD SMT	(1) Audio serial data 2 (center/left channel) (2) Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation
157	ASDATA3	Inout 4MA PD SMT	(1) Audio serial data 3 (surround left/surround right channel) (2) Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation OR Videoin Data PortB 1
158	ASDATA4	Inout 4MA PD SMT	(1) Audio serial data 4 (center/left channel) (2) Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation
159	DACVDDC	Power	3.3V power pin for VIDEO DAC circuitry
160	VREF	Analog input	Bandgap reference voltage
161	FS	Analog output	Full scale adjustment
162	YUV0/CIN	Output 4MA, SR	Video data output bit 0 / Compensation capacitor
163	DACVSSC	Ground	Ground pin for VIDEO DAC circuitry
164	YUV1/C	Output 4MA, SR	Video data output bit 1 / Analog chroma output
165	DACVDDB	Power	3.3V power pin for VIDEO DAC circuitry
166	YUV2/Y	Output 4MA, SR	Video data output bit 2 / Analog Y output
167	DACVSSB	Ground	Ground pin for VIDEO DAC circuitry
168	YUV3/CVBS	Output 4MA, SR	Video data output bit 3 / Analog composite output
169	DACVDDA	Power	3.3V power pin for VIDEO DAC circuitry
170	YUV4/G	Output 4MA, SR	Video data output bit 4 / Green or Y
171	DACVSSA	Ground	Ground pin for VIDEO DAC circuitry
172	YUV5/B	Output 4MA, SR	Video data output bit 5 / Blue or CB
173	YUV6/R	Output 4MA, SR	Video data output bit 6 / Red or CR
174	ICE	Input PD, SMT	Microcontroller ICE mode enable
175	BLAN#	Inout 4MA, SR SMT	Video blank area, active low / Videoin Field_601

Pin No.	Pin name	Type	Function
176	VSYN	Inout 4MA, SR SMT	Vertical sync / Videoin Vsync_601
177	YUV7	Inout 4MA, SR SMT	Video data output bit 7 / Videoin Data PortB 3
178	DVSS	Ground	Ground pin for internal digital circuitry
179	HSYN	Inout 4MA, SR SMT	Horizontal sync / Videoin Hsync_601
180	SPMCLK	Input	Audio DAC master clock of SPDIF input / Videoin Data PortB 4
181	SPDATA	Input	Audio data of SPDIF input / Videoin Data PortB 5
182	DVDD2	Power	2.5V power pin for internal digital circuitry
183	SPLRCK	Input	Audio left/right channel clock of SPDIF input / Videoin Data PortB 6
184	SPBCK	Input	Audio bit clock of SPDIF input/ Videoin Data PortB 7
185	DVDD3	Power	3.3V power pin for internal digital circuitry
186	XTALO	Output	Crystal output
187	XTALI	Input	Crystal input
188	PRST	Input PD, SMT	Power on reset input, active high
189	DVSS	Ground	Ground pin for internal digital circuitry
190	VFO13	Output	The 1st, 3rd header VFO pulse output
191	IDGATE	Output	Header detect signal output
192	DVDD3	Power	3.3V power pin for internal digital circuitry
193	UDGATE	Output	DVD-RAM recording data gate signal output
194	WOBSI	Input	Wobble signal input
195	SDATA	Output	RF serial data output
196	SDEN	Output	RF serial data latch enable
197	SLCK	Output	RF serial clock output
198	BDO	Input	Flag of defect data input status
199	ADCVSS	Ground	Ground pin for ADC circuitry
200	ADIN	Analog Input	General A/D input
201	RFSUBI	Analog Input	RF subtraction signal input terminal
202	TEZISLV	Analog Input	Tracking error zero crossing low pass input
203	TEI	Analog Input	Tracking error input
204	CSO	Analog Input	Central servo input
205	FEI	Analog Input	Focus error input
206	RFLEVEL	Analog Input	Sub beam add input or RFRP low pass input
207	RFRP_DC	A Input	RF ripple detect input
208	RFRP_AC	Analog Input	RF ripple detect input (through AC coupling)
209	HRFZC	Analog Input	High frequency RF ripple zero crossing
210	PWMVREF	A Input	A reference voltage input for PWM circuitry. A typical value of 4.0 v
211	PWM2VREF	A Input	A reference voltage input for PWM circuitry. A typical value of 2.0 v
212	ADCVDD3	Power	3.3V power pin for ADC circuitry
213	RFDTSLVP	Analog Output	Positive RF data slicer level output
214	RFDTSLVN	Analog Output	Negative RF data slicer level output
215	RFIN	Analog Input	Negative input of RF differential signal
216	RFIP	Analog Input	Positive input of RF differential signal

MEMO

SECTION 6
TEST MODE

6-1. GENERAL DESCRIPTION

The Mirror Time and IOP measurement allows you to make diagnosis and adjustment simply by using the remote commander and monitor TV. The instructions, diagnosis results, etc. are given on the on screen display (OSD).

The Mirror Time and IOP measurement is required in such events where servicing a DVD-Player includes changing the Base Unit (BU). For each new BU to be used with a certain MB-113 board, Mirror Time and IOP measurement need to be carried out.

6-2. STARTING TEST MODE

Press the [TOP MENU], [CLEAR], [POWER] keys on the remote commander in this order with the DVD player in standby mode. The Test Mode starts, then the menu shown below will be displayed on the TV screen.

```
Remocon Diagnosis Menu

0. External Chip Check
1. Servo Parameter Check
2. Drive Manual Operation
3. Emergency History
4. Version Information
5. Video Level Adjustment

Model Name : DPX-1790_UC2
IF-con Ver  : 1.000(xxxx)
```

The menu above is the Remocon Diagnosis Menu screen which consists of six main function. At the bottom of the menu screen, the model name and IF-con version. To enter Mirror Time Adjustment menu, press button [2] on the remote commander to enter Drive Manual Operation menu. To exit from the Test Mode, press the power button on the remote commander.

6-3. DRIVE MANUAL OPERATION

The Drive Manual Operation menu consists of five main function. By pressing [2] on the remote commander in the Remocon Diagnosis Menu, the screen will appear as below.

```
Drive Manual Operation

1. Servo Control
2. Track / Layer Jump
3. Manual Adjustment
4. Tray Aging Mode
5. Mirr Time Adjust
0. Return to Top Menu
```

6-4. MIRROR TIME ADJUSTMENT

To enter Mirror Time Adjustment, press [5] on the remote commander. The screen will appear as below.

```
Mirr time Adjust Menu

1. CD MIRR time Check:
2. DVD MIRR time Check:
3. Threshold:
4. Save to EEPROM
5. Default set MIRR time

[Open] Tray open [Close] Tray close
[0] Return to previous menu
```

There are five main commands in the Mirr time Adjust menu as shown in the figure above. The functions of each command are described in the following page.

1. CD Mirr time Check
This command checks the Mirror time value for CD disc.

2. DVD Mirr time Check
This command checks the Mirror time value for DVD disc.

3. Threshold
This command displays the threshold value between CD and DVD mirror time.

4. Save to EEPROM
This command saves an adjusted mirror time value to the EEPROM.

5. Default set MIRR time
This command will set CD and DVD mirror time to firmware default value.

[Open] / [Close]
Pressing the Open / Close button controls the tray for disc change during mirror time adjustment.

[0] Return to previous menu
Press [0] button to return to previous menu.

6-4-1. EXECUTING MIRROR TIME ADJUSTMENT

In order to execute mirror time adjustment, the following standard procedures must be followed.

(1) In standby mode, press [TOP MENU], [CLEAR], [POWER] to enter Remocon Diagnosis Mode.

(2) Select "2. Drive Manual Operation".

```
Remocon Diagnosis Menu

0. External Chip Check
1. Servo Parameter Check
2. Drive Manual Operation
3. Emergency History Check
4. Version information
5. Video Level Adjustment

Model        : DPX-1790_UC2
IF-con  Ver  : 1.000 (5B84)
Syscon  Ver  : 1.81
```

(3) Select "5. MIRR time Adjust".

```
Drive Manual Operation

1. Servo Control
2. Track/Layer Jump
3. Manual Adjustment
4. Tray Aging Mode
5. MIRR time Adjust
0. Return to Top Menu
```

(4) Select "5. Default set MIRR time".

```
MIRR time adjustment Menu

1. CD MIRR time Check:
2. DVD MIRR time Check:
3. Threshold:
4. Save to EEPROM:
5. Default set MIRR time:

[Open] Tray open [Close] tray close
[0] Return to previous menu
```

(5) Select "3. Threshold".

(6) Confirm the number. If it is 75, go to next step. If it is any other value, return to step 4.

```
MIRR time adjustment Menu

1. CD MIRR time Check:
2. DVD MIRR time Check:
3. Threshold: (75) ←
4. Save to EEPROM:
5. Default set MIRR time:

[Open] Tray open [Close] tray close
[0] Return to previous menu
```

(7) Push "Open / Close" key to eject tray.

(8) Insert Test Disc HLX-504 into tray.

(9) Push "Open / Close" key to close tray.

(10) Push "2. DVD MIRR time Check".

(11) Wait for HEX number to display.

(12) Confirm the number, if XX is 28 ~ 70, proceed with next step. If no, return to 7.

```
MIRR time adjustment Menu

1. CD MIRR time Check:
2. DVD MIRR time Check:  xx (xx) ↙
3. Thereshold:
4. Save to EEPROM:
5. Default set MIRR time:

[Open] tray open [close] tray close
[0] Return to previous menu
```

(13) Push "4. Save to EEPROM".

(14) Confirm the same values are displayed. If it is not same, return to step 7.

```
MIRR time adjustment Menu

1. CD MIRR time Check:
2. DVD MIRR time Check: (XX XX) ↙
3. Threshold:
4. Save to EEPROM:
5. Default set MIRR time:

[Open] Tray open [close] tray close
[0] Return to previous menu
```

(15) Push "Open / Close" key to eject tray.

(16) Take out HLX-504 and insert Test Disc YEDS-18 into tray.

(17) Push "Open / Close" key to close tray.

(18) Push "1. CD MIRR time check".

(19) Wait for HEX number to display.

(20) Confirm the number, if YY is 5A ~ E8, proceed with next step. If no, return to 15.

```
MIRR time adjustment Menu

1. CD MIRR time Check:  yy (YY) ↙
2. DVD MIRR time Check:  XX  XX
3. Threshold:
4. Save to EEPROM:
5. Default set MIRR time:

[Open] Tray open [close] tray close
[0] Return to previous menu
```

(21) Push “4. Save to EEPROM”.

(22) Confirm the same values are displayed. If it is not the same, return to step 15.

```
        MIRR time adjustment Menu

1. CD MIRR time check:  YY YY
2. DVD MIRR time check:  XX XX
3. Threshold:
4. Save to EEPROM:
5. Default set MIRR time:

[Open] Tray open [close] tray close
[0] Return to previous menu
```

(23) Push “3. Threshold” to confirm the Threshold number. If it is 70 ~ 7A, proceed to the next step. Otherwise, return to step 7. In case of the Threshold number does not become 70 ~ 7A after retry 3 times, exchange the BU.

(24) Push “Open / Close” key to eject tray.

(25) Remove Test Disc YEDS-18 from tray.

(26) Push “Open / Close” key to close tray.

(27) Press “0” to return to the Remocon Diagnosis Menu and press power button to switch OFF the DVD player.

6-5. EXECUTING IOP MEASUREMENT

In order to execute mirror time adjustment, the following standard procedures must be followed.

(1) In standby mode, press [TOP MENU], [CLEAR], [POWER] to enter Remocon Diagnosis Mode.

```
        Remocon Diagnosis Menu

0. External Chip Check
1. Servo Parameter Check
2. Drive Manual Operation
3. Emergency History Check
4. Version information
5. Video Level Adjustment

Model        : DPX-1790_UC2
IF-con  Ver  : 1.000 (5B84)
Syscon  Ver  : 1.81
```

(2) Select “2. Drive Manual Operation” by pressing the [2] key on the remote commander. The screen will appear as below.

```
        Drive Manual Operation

1. Servo Control
2. Track/Layer Jump
3. Manual Adjustment
4. Tray Aging Mode
5. MIRR time adjust
0. Return to top Menu
```

(3) Select “3. Manual Adjustment” by pressing the [3] key on the remote commander. The screen will appear as below.

```
        Manual Adjust

1. Track Balance Adjust:
2. Track Gain Adjust:
3. Focus Balance Adjust:
4. Focus Gain Adjust:
5. Eg boost Adjust:
6. Iop:
7. TRV. Level:
8. S curve(FE) Level:
9. RFL(PI) Level:
0. MIRR Time:

? ? Change Value
[RETURN] Return to previous menu
```

(4) Select Iop by pressing [6] key on the remote commander.

(5) Wait until a hexadecimal number appear.

```
        Manual Adjust

1. Track Balance Adjust:
2. Track Gain Adjust:
3. Focus Balance Adjust:
4. Focus Gain Adjust:
5. Eq Boost Adjust:
6. Iop: ED 9E
7. TRV. Level:
8. S curve(FE) Level:
9. RFL(PI) Level:
0. MIRR Time:

Change Value
[0] Return to previous menu
```

(6) Convert each data from hexadecimal to decimal using conversion table.

(7) Substract between these two values.

(8) If the remainder is smaller than 93 (decimal), then it is OK. However if the value is higher than 93, then the BU is defective and need to be change.

(9) Press [RETURN] to return back to previous menu.

(10) Press 0 to return to Top Menu and power OFF the DVD Player.

MEMO

SECTION 7
ELECTRICAL ADJUSTMENT

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

Instruments required:

1) Digital voltmeter

7-1. POWER SUPPLY CHECK

Mode	E-E
Instrument	Digital voltmeter
EVER +5.0 V Check	
Test point	CN201 pin ⑪
Specification	5.0 ± 0.3 Vdc
SW +3.5 V Check	
Test point	CN201 pin ⑩
Specification	3.4 ± 0.2 Vdc
SW+5 V Check	
Test point	CN201 pin ⑫
Specification	5.0 ± 0.3 Vdc
SW + 8 V Check	
Test point	CN201 pin ⑤, ⑥
Specification	8.0 ± 0.5 Vdc
EVER + 8 V Check	
Test point	CN201 pin ⑬
Specification	8.0 ± 0.5 Vdc
EVER –15.5 V Check	
Test point	CN201 pin ②
Specification	–15.5 ± 1.0 Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

Note

Because the heatsink installed on the power supply board is a part of the primary side, never touch it to avoid electrical shock.

MEMO

SECTION 8
REPAIR PARTS LIST

8-1. EXPLODED VIEWS

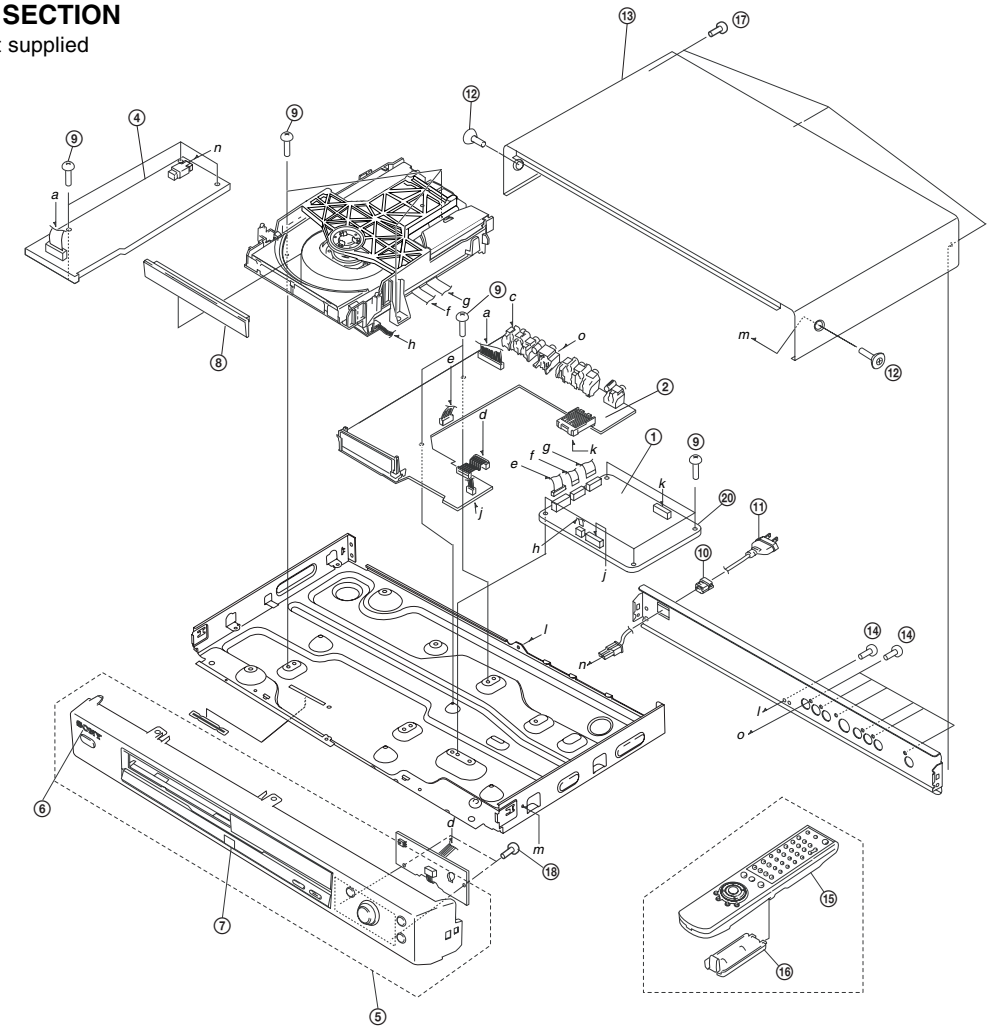
NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts Color ↑ Cabinet's Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. MAIN SECTION

ns : not supplied



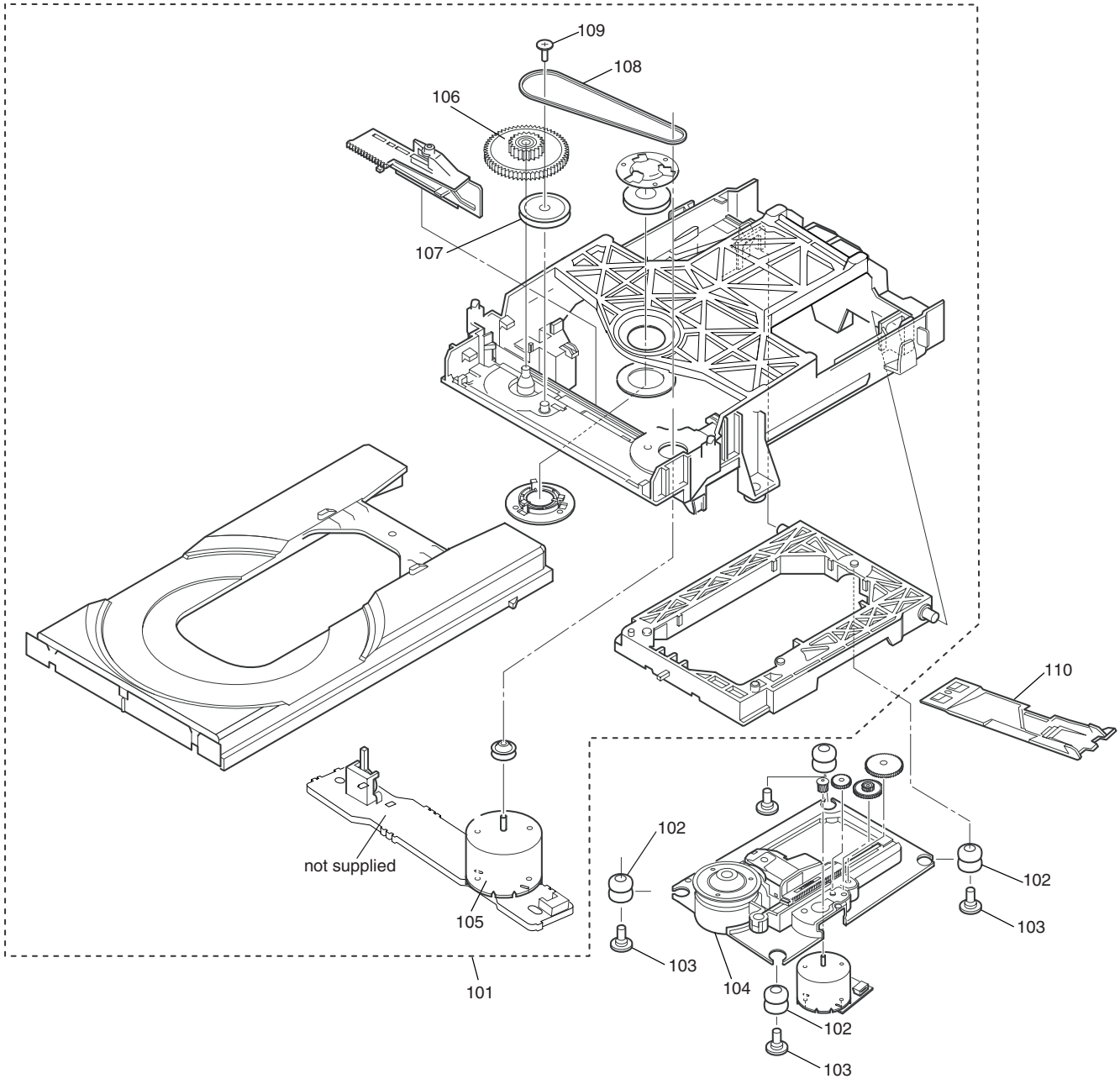
Ref. No.	Part No.	Description	Remark
1	A-6071-274-A	AF-99SM (U) COMPL	
2	A-6071-276-A	MB-113SM (UZ) COMPL	
⚠4	1-468-778-11	POWER BLOCK	
5	X-3953-652-1	PANEL ASSY, FRONT	
6	3-066-225-11	SONY BADGE (5-A)	
7	3-073-777-61	EMBLEM, DVD	
8	3-081-651-02	COVER, TRAY (P)	
9	3-970-608-01	SUMITITE (B3), +BV	
⚠10	3-073-182-02	BUSHING, CODE	
⚠11	1-823-597-11	CORD, POWER	
12	3-070-883-12	SCREW, TAPPING	
13	3-080-912-11	CASE UPPER	
13	3-080-912-41	CASE, UPPER	
14	3-970-608-51	SUMITITE (B3), +BV	
15	1-477-724-11	REMOTE COMMANDER (RMT-D153A)	
16	3-073-096-01	LID, BATTERY CASE	
17	3-710-901-11	SCREW, TAPPING	
18	4-951-620-01	SUMITITE (B3), TBV	
	1-827-502-11	FFC FFS-11	
	4-951-620-01	SCREW (2.6x8), +BVTP	

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-2. MECHANISM DECK ASSEMBLY

ns : not supplied



Ref. No.	Part No.	Description	Remark
101	A-6071-197-A	LOADING ASSY (J)	
102	3-085-021-01	INSULATOR	
103	3-067-344-01	INSULATOR SCREW	
⚠104	A-6071-561-A	KHM300AAA SERVICE ASSY	
105	1-763-967-11	MOTOR, DC	
106	3-085-015-01	DRIVING GEAR	
107	3-085-016-01	PULLEY GEAR	
108	3-085-019-01	BELT	
109	4-974-711-11	SCREW (2x5)(P TYIGHT), (+)PTTWH	
110	3-085-013-01	FC COVER	

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Not all of the parts for POWER BLOCK (HS12S2U) are listed.
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH
- Abbreviation

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description				Remark
	A-6071-274-A	AF-99SM(U) COMPLETE				
		**********				
		<CAPACITOR>				
C101	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C102	1-126-947-11	ELECT	47UF	20.00%	35V	
C107	1-126-947-11	ELECT	47UF	20.00%	35V	
C109	1-165-176-11	CERAMIC CHIP	0.047UF	10.00%	16V	
C110	1-126-947-11	ELECT	47UF	20.00%	35V	
C111	1-126-947-11	ELECT	47UF	20.00%	35V	
C112	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V	
C113	1-126-947-11	ELECT	47UF	20.00%	35V	
C114	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V	
C201	1-164-739-11	CERAMIC CHIP	560PF	5.00%	50V	
C202	1-164-739-11	CERAMIC CHIP	560PF	5.00%	50V	
C203	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V	
C204	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V	
C205	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V	
C206	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V	
C207	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C208	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C209	1-126-960-11	ELECT	1UF	20.00%	50V	
C210	1-126-947-11	ELECT	47UF	20.00%	35V	
C211	1-126-947-11	ELECT	47UF	20.00%	35V	
C213	1-126-934-11	ELECT	220UF	20.00%	16V	
C222	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C223	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C224	1-126-947-11	ELECT	47UF	20.00%	35V	
C228	1-126-947-11	ELECT	47UF	20.00%	35V	
C229	1-126-947-11	ELECT	47UF	20.00%	35V	
C244	1-126-947-11	ELECT	47UF	20.00%	35V	
C401	1-126-947-11	ELECT	47UF	20.00%	35V	
C411	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C415	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V	
C418	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C420	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C423	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C424	1-164-004-11	CERAMIC CHIP	0.1UF	10.00%	25V	
C426	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V	
C427	1-164-004-11	CERAMIC CHIP	0.1UF	10.00%	25V	
C428	1-164-004-11	CERAMIC CHIP	0.1UF	10.00%	25V	
C471	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C472	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V	
C475	1-126-947-11	ELECT	47UF	20.00%	35V	
C476	1-126-947-11	ELECT	47UF	20.00%	35V	
C478	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C479	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C480	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C482	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C483	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C484	1-104-665-11	ELECT	100UF	20.00%	25V	
C490	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
		<CONNECTOR>				
CN406	1-794-479-11	CONNECTOR, FPC/FFC 9P				
CN471	1-573-911-11	PIN, CONNECTOR 13P				
		<DIODE>				
D108	8-719-067-40	DIODE STZ6.8N-T146				
D109	8-719-067-40	DIODE STZ6.8N-T146				
D201	8-719-914-43	DIODE DAN202K-T-146				
D202	8-719-914-44	DIODE DAP202K				
D204	8-719-988-61	DIODE 1SS355TE-17				
		<TERMINAL>				
ET471	1-537-738-21	TERMINAL, EARTH				
ET472	1-537-738-21	TERMINAL, EARTH				
		<IC>				
IC102	6-701-820-01	IC LA73053-TLM-E				
IC103	8-759-662-86	IC NJM79M05DL1A(TE2)				
IC201	8-759-909-71	IC BA4558F				
IC203	8-759-711-59	IC NJM78L05UA-TE1				
IC404	6-803-266-01	IC 86CK74AFG-4V50CM				
IC407	6-703-743-01	IC AN13992A				
IC408	6-703-742-01	IC S-80830CNUA-B8PT2G				
IC474	8-759-666-12	IC MM1385DNLE				

Ref. No.	Part No.	Description			Remark
		<JUMPER RESISTOR>			
JR101	1-216-295-00	SHORT CHIP	0		
JR102	1-216-295-00	SHORT CHIP	0		
JR104	1-216-295-00	SHORT CHIP	0		
JR105	1-216-295-00	SHORT CHIP	0		
JR113	1-216-295-00	SHORT CHIP	0		
JR203	1-216-295-00	SHORT CHIP	0		
JR204	1-216-295-00	SHORT CHIP	0		
JR205	1-216-295-00	SHORT CHIP	0		
JR206	1-216-295-00	SHORT CHIP	0		
JR208	1-216-295-00	SHORT CHIP	0		
JR209	1-216-295-00	SHORT CHIP	0		
JR210	1-216-295-00	SHORT CHIP	0		
JR211	1-216-295-00	SHORT CHIP	0		
JR214	1-216-295-00	SHORT CHIP	0		
JR401	1-216-295-00	SHORT CHIP	0		
JR405	1-216-295-00	SHORT CHIP	0		
JR406	1-216-295-00	SHORT CHIP	0		
JR408	1-216-295-00	SHORT CHIP	0		
JR409	1-216-295-00	SHORT CHIP	0		
JR410	1-216-295-00	SHORT CHIP	0		
JR411	1-216-295-00	SHORT CHIP	0		
JR413	1-216-295-00	SHORT CHIP	0		
JR415	1-216-295-00	SHORT CHIP	0		
JR417	1-216-295-00	SHORT CHIP	0		
JR418	1-216-295-00	SHORT CHIP	0		
JR419	1-216-295-00	SHORT CHIP	0		
JR420	1-216-295-00	SHORT CHIP	0		
JR421	1-216-295-00	SHORT CHIP	0		
JR422	1-216-295-00	SHORT CHIP	0		
JR424	1-216-295-00	SHORT CHIP	0		
JR425	1-216-295-00	SHORT CHIP	0		
JR426	1-216-295-00	SHORT CHIP	0		
		<IC LINK>			
⚠PS471	1-576-508-21	IC LINK		0.7A	50V
⚠PS472	1-576-508-21	IC LINK		0.7A	50V
		<TRANSISTOR>			
Q104	8-729-421-19	TRANSISTOR UN2213			
Q105	8-729-424-08	TRANSISTOR UN2111			
Q201	8-729-010-08	TRANSISTOR MSB710-RT1			
Q202	8-729-421-19	TRANSISTOR UN2213			
Q203	8-729-010-25	TRANSISTOR MSD601-RT1			
Q204	8-729-424-70	TRANSISTOR UN2217-TX			
Q205	8-729-010-05	TRANSISTOR MSB709-RT1			
Q207	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO			
Q208	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO			
Q211	8-729-010-25	TRANSISTOR MSD601-RT1			
Q216	8-729-010-05	TRANSISTOR MSB709-RT1			
Q472	8-729-048-28	TRANSISTOR 2SD1766-T100-QR			
Q473	8-729-424-08	TRANSISTOR UN2111			
		<RESISTOR>			
R121	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R125	1-216-295-00	SHORT CHIP	0		
R127	1-208-755-11	METAL CHIP	75	0.5%	1/10W
R128	1-208-755-11	METAL CHIP	75	0.5%	1/10W
R129	1-216-073-91	RES-CHIP	10K	5%	1/10W
R130	1-208-755-11	METAL CHIP	75	0.5%	1/10W
R132	1-216-295-00	SHORT CHIP	0		
R133	1-208-755-11	METAL CHIP	75	0.5%	1/10W
R134	1-208-755-11	METAL CHIP	75	0.5%	1/10W
R135	1-208-755-11	METAL CHIP	75	0.5%	1/10W
R153	1-215-860-11	METAL OXIDE	33	5%	1W
R154	1-215-860-11	METAL OXIDE	33	5%	1W
R201	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R202	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R203	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R204	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R205	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R206	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R207	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R208	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R209	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R210	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R211	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R212	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R213	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R216	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R217	1-216-073-91	RES-CHIP	10K	5%	1/10W
R218	1-216-097-11	RES-CHIP	100K	5%	1/10W
R219	1-216-105-91	RES-CHIP	220K	5%	1/10W
R220	1-216-041-00	RES-CHIP	470	5%	1/10W
R221	1-216-073-91	RES-CHIP	10K	5%	1/10W
R222	1-216-073-91	RES-CHIP	10K	5%	1/10W
R224	1-216-073-91	RES-CHIP	10K	5%	1/10W
R225	1-216-089-11	RES-CHIP	47K	5%	1/10W
R226	1-216-041-00	RES-CHIP	470	5%	1/10W
R227	1-216-041-00	RES-CHIP	470	5%	1/10W
R228	1-216-073-91	RES-CHIP	10K	5%	1/10W
R229	1-216-089-11	RES-CHIP	47K	5%	1/10W
R230	1-216-089-11	RES-CHIP	47K	5%	1/10W
R234	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R235	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R238	1-216-097-11	RES-CHIP	100K	5%	1/10W
R240	1-216-041-00	RES-CHIP	470	5%	1/10W
R241	1-216-041-00	RES-CHIP	470	5%	1/10W
R249	1-216-033-00	RES-CHIP	220	5%	1/10W
R251	1-216-021-00	RES-CHIP	68	5%	1/10W
R252	1-216-073-91	RES-CHIP	10K	5%	1/10W
R253	1-216-049-11	RES-CHIP	1K	5%	1/10W
R254	1-216-049-11	RES-CHIP	1K	5%	1/10W
R256	1-216-049-11	RES-CHIP	1K	5%	1/10W
R286	1-216-295-00	SHORT CHIP	0		
R407	1-216-013-00	RES-CHIP	33	5%	1/10W
R408	1-216-073-91	RES-CHIP	10K	5%	1/10W
R418	1-216-027-00	RES-CHIP	120	5%	1/10W
R428	1-216-025-11	RES-CHIP	100	5%	1/10W
R429	1-216-073-91	RES-CHIP	10K	5%	1/10W
R430	1-216-073-91	RES-CHIP	10K	5%	1/10W

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
R432	1-216-073-91	RES-CHIP	10K	5%	1/10W
R433	1-216-295-00	SHORT CHIP	0		
R434	1-216-097-11	RES-CHIP	100K	5%	1/10W
R436	1-216-073-91	RES-CHIP	10K	5%	1/10W
R438	1-216-073-91	RES-CHIP	10K	5%	1/10W
R442	1-216-025-11	RES-CHIP	100	5%	1/10W
R443	1-216-025-11	RES-CHIP	100	5%	1/10W
R444	1-216-025-11	RES-CHIP	100	5%	1/10W
R445	1-216-025-11	RES-CHIP	100	5%	1/10W
R446	1-216-025-11	RES-CHIP	100	5%	1/10W
R447	1-216-025-11	RES-CHIP	100	5%	1/10W
R453	1-218-616-91	METAL CHIP	15	5%	1W
R457	1-218-628-11	METAL CHIP	150	5%	1W
R458	1-218-628-11	METAL CHIP	150	5%	1W
R459	1-216-298-00	RES-CHIP	2.2	5%	1/10W
R460	1-216-073-91	RES-CHIP	10K	5%	1/10W
R468	1-216-073-91	RES-CHIP	10K	5%	1/10W
R469	1-216-073-91	RES-CHIP	10K	5%	1/10W
R470	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R475	1-216-073-91	RES-CHIP	10K	5%	1/10W
R476	1-216-065-00	RES-CHIP	1.8K	5%	1/10W
R477	1-216-065-00	RES-CHIP	1.8K	5%	1/10W
		<VIBRATOR>			
X401	1-781-472-21	VIBRATOR, CERAMIC			

	A-6071-276-A	MB-113SM(U2) COMPLETE			
		**********			
		<CAPACITOR>			
C104	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C106	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C107	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C109	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C110	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C111	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C112	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C113	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C114	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C115	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C116	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C117	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C119	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C120	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C121	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C122	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C123	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C124	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C132	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C138	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C139	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C140	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C141	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C142	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C143	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C144	1-162-967-11	CERAMIC CHIP	0.0033UF	10.00%	50V
C145	1-162-967-11	CERAMIC CHIP	0.0033UF	10.00%	50V

Ref. No.	Part No.	Description			Remark
C147	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C148	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C152	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C153	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C154	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C155	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C156	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C161	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C165	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C166	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C167	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C168	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C169	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C170	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C171	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C172	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C173	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C175	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C176	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C177	1-165-908-11	CERAMIC CHIP	1UF	10%	10V
C178	1-165-908-11	CERAMIC CHIP	1UF	10%	10V
C179	1-165-908-11	CERAMIC CHIP	1UF	10%	10V
C180	1-165-908-11	CERAMIC CHIP	1UF	10%	10V
C181	1-165-908-11	CERAMIC CHIP	1UF	10%	10V
C184	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C185	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C186	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C189	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C190	1-164-245-11	CERAMIC CHIP	0.015UF	10.00%	25V
C193	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C194	1-164-245-11	CERAMIC CHIP	0.015UF	10.00%	25V
C197	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C198	1-162-926-11	CERAMIC CHIP	82PF	5.00%	50V
C199	1-164-392-11	CERAMIC CHIP	390PF	5.00%	50V
C202	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C203	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C206	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C207	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C209	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C212	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C213	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C214	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C215	1-165-908-11	CERAMIC CHIP	1UF	10%	10V
C216	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C218	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C219	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C220	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C222	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C223	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C224	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C225	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C227	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C229	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C231	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C232	1-125-889-91	CERAMIC CHIP	2.2UF	10%	10V
C236	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C237	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C239	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C240	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C241	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V

Ref. No.	Part No.	Description			Remark
C244	1-162-915-11	CERAMIC CHIP	10PF	0.50PF	50V
C245	1-162-915-11	CERAMIC CHIP	10PF	0.50PF	50V
C246	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C247	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C248	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C249	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C251	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C255	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C256	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C258	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C259	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C260	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C262	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C263	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C264	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C265	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C266	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C268	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C269	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C270	1-126-204-11	ELECT CHIP	47UF	20.00%	16V
C273	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
		<CONNECTOR>			
CN103	1-815-763-11	CONNECTOR, FFC/FPC 24P			
CN104	1-794-234-11	CONNECTOR, FFC/FPC 6P			
CN105	1-695-320-91	PIN, CONNECTOR 2P			
CN202	1-816-369-21	CONNECTOR, BOARD TO BOARD 25P			
CN205	1-778-315-11	PIN, CONNECTOR (PC BOARD) 5P			
CN206	1-691-550-91	PIN, CONNECTOR 3P			
		<FERRITE>			
FB201	1-469-324-21	FERRITE	0UH		
FB202	1-469-324-21	FERRITE	0UH		
FB203	1-469-324-21	FERRITE	0UH		
FB204	1-469-324-21	FERRITE	0UH		
FB205	1-216-295-91	SHORT CHIP	0UH		
FB206	1-216-295-91	SHORT CHIP	0UH		
		<FILTER>			
FL203	1-234-177-21	FERRITE	0UH		
FL204	1-234-177-21	FERRITE	0UH		
FL205	1-234-177-21	FILTER, CHIP EMI	0UH		
FL207	1-234-177-21	FERRITE	0UH		
FL208	1-234-177-21	FERRITE	0UH		
FL209	1-233-893-21	FILTER, CHIP EMI			
		<IC>			
IC101	6-704-524-01	IC FAN8036L			
IC102	6-704-471-01	IC CXD9780R			
IC151	6-704-470-01	IC TK11233CMCL-G			
IC201	6-704-472-01	IC CXD9781R			
IC202	6-704-261-01	IC TK11225CMCL-G			
IC205	6-704-004-01	IC BR24L76F-WE2			
IC206	6-704-893-01	IC GLT5640L1P-7TC			
IC207	6-703-704-01	IC AK4381VT-E2			
IC208	6-702-302-01	IC TK11133CSCL-G			

Ref. No.	Part No.	Description			Remark
		<COIL>			
L165	1-412-031-11	INDUCTOR	47UH		
		<TRANSISTOR>			
Q168	8-729-424-59	TRANSISTOR UN2212-TX			
Q170	6-550-008-01	TRANSISTOR UM6K1N-TN			
Q171	6-550-653-01	TRANSISTOR QST8TR			
		<RESISTOR>			
R101	1-216-833-11	METAL CHIP	10K	5%	1/10W
R102	1-216-833-11	METAL CHIP	10K	5%	1/10W
R103	1-216-839-11	METAL CHIP	33K	5%	1/10W
R104	1-216-839-11	METAL CHIP	33K	5%	1/10W
R107	1-216-833-11	METAL CHIP	10K	5%	1/10W
R109	1-216-834-11	METAL CHIP	12K	5%	1/10W
R110	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R111	1-216-835-11	METAL CHIP	15K	5%	1/10W
R112	1-216-826-11	METAL CHIP	2.7K	5%	1/10W
R114	1-216-833-11	METAL CHIP	10K	5%	1/10W
R117	1-216-834-11	METAL CHIP	12K	5%	1/10W
R118	1-216-864-11	SHORT CHIP	0		
R119	1-216-839-11	METAL CHIP	33K	5%	1/10W
R120	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R121	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R122	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R123	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R124	1-218-867-11	METAL CHIP	6.8K	5%	1/10W
R126	1-216-838-11	METAL CHIP	27K	5%	1/10W
R127	1-216-833-11	METAL CHIP	10K	5%	1/10W
R128	1-216-839-11	METAL CHIP	33K	5%	1/10W
R129	1-218-893-11	METAL CHIP	82K	0.5%	1/10W
R130	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R131	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R132	1-216-833-11	METAL CHIP	10K	5%	1/10W
R136	1-218-875-11	METAL CHIP	15K	0.5%	1/10W
R137	1-216-864-11	SHORT CHIP	0		
R155	1-216-821-11	METAL CHIP	1K	5%	1/10W
R156	1-216-821-11	METAL CHIP	1K	5%	1/10W
R157	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R158	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R160	1-216-809-11	METAL CHIP	100	5%	1/10W
R165	1-216-864-11	SHORT CHIP	0		
R166	1-216-864-11	SHORT CHIP	0		
R167	1-216-864-11	SHORT CHIP	0		
R168	1-216-864-11	SHORT CHIP	0		
R175	1-216-809-11	METAL CHIP	100	5%	1/10W
R176	1-216-295-00	SHORT CHIP	0		
R178	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R179	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R180	1-216-809-11	METAL CHIP	100	5%	1/10W
R181	1-216-841-11	METAL CHIP	47K	5%	1/10W
R182	1-216-841-11	METAL CHIP	47K	5%	1/10W
R183	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R184	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R185	1-216-857-11	METAL CHIP	1M	5%	1/10W
R186	1-216-841-11	METAL CHIP	47K	5%	1/10W
R187	1-216-864-11	SHORT CHIP	0		

Ref. No.	Part No.	Description			Remark
R188	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R189	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R190	1-216-864-11	SHORT CHIP	0		
R192	1-216-841-11	METAL CHIP	47K	5%	1/10W
R193	1-216-864-11	SHORT CHIP	0		
R194	1-216-864-11	SHORT CHIP	0		
R195	1-216-833-11	METAL CHIP	10K	5%	1/10W
R197	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R198	1-216-821-11	METAL CHIP	1K	5%	1/10W
R199	1-216-835-11	METAL CHIP	15K	5%	1/10W
R201	1-216-864-11	SHORT CHIP	0		
R208	1-216-864-11	SHORT CHIP	0		
R213	1-216-833-11	METAL CHIP	10K	5%	1/10W
R215	1-216-295-00	SHORT CHIP	0		
R216	1-216-833-11	METAL CHIP	10K	5%	1/10W
R220	1-216-832-11	METAL CHIP	8.2K	5%	1/10W
R222	1-216-833-11	METAL CHIP	10K	5%	1/10W
R224	1-216-864-11	SHORT CHIP	0		
R225	1-216-821-11	METAL CHIP	1K	5%	1/10W
R226	1-216-821-11	METAL CHIP	1K	5%	1/10W
R227	1-216-845-11	METAL CHIP	100K	5%	1/10W
R244	1-216-836-11	METAL CHIP	18K	5%	1/10W
R247	1-216-809-11	METAL CHIP	100	5%	1/10W
R248	1-216-845-11	METAL CHIP	100K	5%	1/10W
R249	1-216-295-00	SHORT CHIP	0		
R258	1-216-809-11	METAL CHIP	100	5%	1/10W
R260	1-216-864-11	SHORT CHIP	0		
R263	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R264	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R265	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R266	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R267	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R268	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R276	1-218-841-11	METAL CHIP	560	0.5%	1/10W
R279	1-216-809-11	METAL CHIP	100	5%	1/10W
R289	1-218-916-11	METAL CHIP	750K	5%	1/10W
R298	1-216-833-11	METAL CHIP	10K	5%	1/10W
R299	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1015	1-216-809-11	METAL CHIP	100	5%	1/10W
R1018	1-216-864-11	SHORT CHIP	0		
R1019	1-216-864-11	SHORT CHIP	0		
R1020	1-216-864-11	SHORT CHIP	0		
R1021	1-216-864-11	SHORT CHIP	0		
R1022	1-216-295-00	SHORT CHIP	0		
R1023	1-216-295-00	SHORT CHIP	0		
R1026	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1027	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1028	1-216-864-11	SHORT CHIP	0		
R1031	1-216-833-11	SHORT CHIP	0		
		<VIBRATOR>			
X201	1-781-867-21	VIBRATOR, CRYSTAL			

	A-6071-198-A	MS-161 COMPLETE			
		**********			
CN001	1-815-412-11	CONNECTOR, FFC/FPC 5P			
S001	1-786-509-11	SWITCH, ROTARY			

Ref. No.	Part No.	Description			Remark
		SW-413SM(U) COMPLETE			
		**********			
		<CAPACITOR>			
C820	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
		<CONNECTOR>			
CN802	1-794-473-11	CONNECTOR, FPC/FFC 9P			
		<DIODE>			
D811	8-719-056-06	DIODE SLR-342DC3F			
		<IC>			
IC820	6-703-744-01	IC GP1UE26SXKOF			
		<JUMPER RESISTOR>			
JR801	1-216-295-00	SHORT CHIP	0		
JR802	1-216-295-00	SHORT CHIP	0		
		<RESISTOR>			
R802	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R803	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R804	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R805	1-216-081-00	RES-CHIP	22K	5%	1/10W
R807	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R820	1-216-017-91	RES-CHIP	47	5%	1/10W
R822	1-216-033-00	RES-CHIP	220	5%	1/10W
R823	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
		<SWITCH>			
S801	1-771-410-21	SWITCH, TACTILE			
S802	1-771-410-21	SWITCH, TACTILE			
S803	1-771-410-21	SWITCH, TACTILE			
S805	1-771-410-21	SWITCH, TACTILE			
S807	1-771-410-21	SWITCH, TACTILE			
S808	1-771-410-21	SWITCH, TACTILE			
S809	1-771-410-21	SWITCH, TACTILE			
S816	1-771-410-21	SWITCH, TACTILE			

⚠	1-468-778-11	POWER BLOCK	HS12S2U		
		**********			
		<CAPACITOR>			
⚠C101	1-115-165-11	FILM CHIP	0.1UF		250V
C301	1-126-960-51	ELECTROLYTIC	1UF		50V
C314	1-126-965-51	ELECTROLYTIC	22UF		50V
		<CONNECTOR>			
⚠CN101	2-178-496-4	CONNECTOR AMP			
CN201	1-573-911-11	CONNECTOR AMP			

Ref. No.	Part No.	Description		Remark
		<DIODE>		
D101	9-885-020-49	DIODE S1WBA60		
D104	9-719-901-33	DIODE 1SS133		
D311	8-719-510-02	DIODE D1NS4		
D511	8-719-063-70	DIODE D1NL20U		
D611	8-719-210-21	DIODE 11EQS04		
		<FUSE>		
⚠F101	1-533-296-11	FUSE 2A		125V
FC1	9-885-012-77	FUSE CLIP 47UF		35V
		<IC>		
IC301	8-759-420-19	IC AN1431T		
		<COIL>		
L101	9-885-012-78	LINE FILTER	18MH	
L211	9-885-020-56	CHOKE COIL	10UH	
L221	9-885-020-56	CHOKE COIL	10UH	
L311	9-885-020-56	CHOKE COIL	10UH	
L511	9-885-020-56	CHOKE COIL	10UH	
L611E	9-885-012-81	CHOKE COIL	100UH	
		<IC LINK>		
⚠P311	9-885-024-66	PROTECTOR		125V, 1A
⚠P611	1-533-590-11	PROTECTOR		125V, 1A
⚠PC101	9-885-020-59	PHOTO COUPLER		125V, 1A
		<TRANSISTOR>		
Q311	9-885-020-62	TRANSISTOR 2SC2665		
Q611	9-885-020-61	TRANSISTOR 2SD1768S		
Q712	8-729-029-92	TRANSISTOR DTC143E SA		

Ref. No.	Part No.	Description	Remark

ACCESSORIES
****

	3-085-050-11	MANUAL, INSTRUCTION
	1-477-724-11	REMOTE COMMANDER RMT-D153A
	3-071-119-11	BATTERY COVER REMOTE COMMANDER
	1-751-271-11	CORD, CONNECTION

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

9-929-773-12

Sony Corporation
Home Storage Company

2003H0800-1
2003. 08
Published by Video Design Department